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ANNUAL REPORT

OF THE

SECRETARY OF INTERNAL AFFAIRS

OF THE

COMMONWEALTH OF PENNSYLVANIA.

PART III.

INDUSTRIAL STATISTICS.

VOL XIX.

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REPORT

OF THE

Bureau of Industrial Statistics.

COMMUNICATION.

DEPARTMENT OF INTERNAL AFFAIRS,
HARRISBURG, PA., *July 1, 1892.*

To His Excellency ROBERT E. PATTISON,
Governor of the Commonwealth of Pennsylvania:

SIR: In compliance with the requirements of the constitution, I have the honor to submit herewith, for transmission to the general assembly, the Nineteenth Annual Report of the Bureau of Industrial Statistics, the same being Part III of report of this Department, for the year ending November 30, 1891.

I am very respectfully,
Your obedient servant,
THOMAS J. STEWART,
Secretary of Internal Affairs.

36954

LETTER OF TRANSMITTAL.

HARRISBURG, *July 1, 1892,*

Honorable THOMAS J. STEWART, *Secretary of Internal Affairs of the Commonwealth of Pennsylvania:*

SIR: I have the honor to present herewith the Nineteenth Annual Report of the Bureau of Industrial Statistics.

I regret to state, that notwithstanding every effort made to procure and publish in the present report the portion of the last national census covering the chief manufactures of Pennsylvania, they have not been obtained. As soon as they are received and compared with statistics of of former years, they will be published separately.

Yours very respectfully,

ALBERT S. BOLLES,
Chief of Bureau.

THE LIABILITY OF EMPLOYERS TO THEIR EMPLOYES.

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PART III.

LEGISLATION OF FOREIGN STATES.

PART I.

THE LIABILITY OF EMPLOYERS TO THEIR EMPLOYES.

1. For many years bills have been introduced at every session of the legislature to extend and define more clearly the duties of employers. These attempts to prescribe statutory duties for those declared by the common law are not confined to Pennsylvania. By the legislative bodies of other states and of foreign countries, the relations of employed to employer have been better defined, or are passing through the stage of discussion for clearer definition.

2. The object of such legislation is to secure the better preservation of the health and lives of workingmen. There was a time, and not very long ago, when not much thought was bestowed on such things. Under the slave system, the last vestiges of which are disappearing from the earth, we know how lightly human life was regarded. The greater attention to the healthfulness of employments, the more careful selection and guarding of machinery, the requirements concerning education and employment of children, are proofs of an increasing regard for the working class.

3. In seeking to establish a rule of duty for employers we think all will agree that, as far as possible, they should be required to do those things which will most tend to preserve the health and lives of their employes. This should be the object of legislation and judicial decision. But this result is not easily attained. A bill has been introduced at every session of the legislature for several years which renders an employer liable for an injury happening to one of his employes or servants through the negligence of another employe or fellow servant. If the end or principle above mentioned be correct, would this bill, if enacted, produce the result desired by its authors? Would it tend to diminish disease and accident or to increase them? Do not grounds exist for believing that if employers were liable in all cases to their employes for injuries resulting from the negligence of their fellow employes, they would become more negligent? The fact cannot be questioned that many of the accidents, especially in the mines, are occasioned by the negligence of the miners themselves, and after they have had ample warning of danger. Notwithstanding these warnings they have decided to continue to work and assume the risks. The following extracts from the last reports of the mine inspectors furnish abundant proof of the assertion:

Mr. Blewitt, inspector of mines in the First Anthracite district, says: "There were seven employes killed by falling down shafts. I am sorry to say that it was caused by carelesness on the part of the victims themselves. If the employes, superintendents, outside and inside foremen, and the other employes at the different collieries,

would live up to the mine laws and colliery rules, it would reduce the number of accidents fully one-half."

Mr. McDonald, inspector of Second Anthracite district, says "In visiting the underground workings I find that a large number of the miners are indifferent in regard to standing their props and timbers properly for the purpose of securing the roof of their working places. When it becomes necessary to stand props or timber for safety, it is reasonable to presume that they should be stood in a proper manner; I have repeatedly called the attention of the miners to this loose way of standing their timbers, which are generally placed in every conceivable way but the rght one, and the excuse has usually been that a shot has placed them in the condition that they were found. While there may be some truth in regard to the coal flying from a blast displacing some of them, I do not think it is the case with the majoriy that I find displaced. I have called the attention of the inside bosses to this loose way of standing props and timbers by the miners where they have charge, as it is dangerous and unworkmanlike, and shows a bad state of discipline by those bosses whose duty it is to see that the miner stands his timber in a proper manner and that the roof is secured as the workings advance, as one-half of the fatal accidents this year were caused by falls of roof and coal which occurred at or near the working faces. While the victims themselves are somewhat to blame, are the bosses, where such timbering and loose discipline exists, entirely blameless?"

Mr. Williams, inspector of the Third Anthracite district, says: "The accidents to single persons, where only one or two is injured or killed at a time, were usually small in number in the year 1890, and in most of these the injured person was responsble, but in all of the disasters that occurred where four or more persons were killed at one time, mine officials were decidedly responsible, and were directly instrumental in producing them."

Mr. Lewis, inspector of the Fourth Anthracite district, says: "In connection with the remarks on these sad occurrences, I wish to make the statement that many of these accidents might have been avoided with the use of ordinary precaution by the victims themselves, or someone else who was in charge of the work at the time. Tenty-five out of the fifty-two fatalities occurred on the surface at the strippings by cars or by machinery in and about the breakers, thus keeping the record the same as last year, viz: forty-six per cent of all the fatal accidents, while the remaining twenty eight fatalities occurred in the mines."

Mr. Stein, inspector of the Fifth Anthracite district, says: "We have a good mine law and many of our miners advocate its revision, and yet they are violating its provisions every day, and when we consider the fact that if the workingmen would have observed and obeyed the law during the year 1890, we would have had only eighteen deaths to record instead of sixty-six. Surely these figures ought to be an incentive for them to obey the law, instead of clamoring for its revision. I am always aware of the fact that some mine foremen do not observe the law as they should, and consequently contribute towards the accidents, but the largest percentage of deaths are the results of carelessness on the part of the workmen themselves."

Mr. McMurtrie, inspector of the Sixth Athracite district, says: "The number of fatal accidents for the year 1890 was thirty-nne as against fifty-two for the previous year, which is a decrease of thirteen;

almost fifty per centum of the fatal accidents were caused by falls of roofs and sides. This being the case every year it goes to show that more lives are lost from this cause than any other, for, as in former years, that a large number of both fatal and non-fatal accidents would be averted if the unfortunates themselves would exercise more care. The accompanying tables show the quantity of coal mined, also the quantity shipped to market, number of persons employed in and about the mines, number of fatal and non-fatal accidents which occurred during the year, and comparisons with years 1887, 1888 and 1889."

Mr. Gay, inspector of the Seventh Anthracite district, says: "We do not wish to convey the idea that the latter mines are free from that dangerous element; far from it. These mines all generate large quantities of gas, notwithstanding not one of the fatal accidents resulted from that source, and only one in consequence of falls of coal and roof, which is another element of danger; in fact falls and fire-damp are the two most treacherous elements of danger the mine workers have to fear; yet but one of the seven fatal accidents are chargeable to those causes, *i. e.*, fire-damp and falls. Hence the other six casualties are attributed to other causes, viz: recklessness on the part of the employes, or a lack of that rigid discipline which is just as indispensable in and about the coal mine as it is for the safety of those engaged on railroads or upon the sea. That the victims contributed largely to their own destruction there is no qustion of doubt: as an instance, had one of the unfortunates contemplated taking his own life he could not have taken a better method. This man attempted to cross a shaft in one of the buntons, about 800 feet above the bottom while the cage was in motion, and, as a natural consequence, the cage in passing him knocked him off the piece of timber down the shaft. In our investigation we learned that this man had done this several times before, and had been cautioned by the foreman against risking his life in such a reckless manner, but it appears without the desired effect."

4. If the fear of injury or of injuring others does not deter employes from taking well-known and unreasonable risks, when neither they nor their fellow employes can obtain pecuniary relief from their employers, would they not be more careless if the rule of duty was so changed that employes could obtain redress from their employers, even though their injuries were the result of their own negligence, or the negligence of those employed with them?

5. On the other hand, suppose that such a law was enacted, would not employers decline to employ all negligent or careless persons? Would not employes who were retained be more secure against accident than they are now? Again, if a more rigid rule of duty was imposed on employers, and they observed it, would not employes, realizing their inability to procure employment if they disregarded the lives of those who labored with them, and were careless in the use of their employers' property, be less negligent in the future? This is the other side of the question and must not be overlooked. As the discussion of the subject will be resumed after reviewing the legal controversies between employed and employers, nothing more will be said in this place.

6. The gravity of the subject, we apprehend, is not fully realized by

many who appeal to the legislatures to establish the legal responsibilities of the two classes. Nothing seems easier to some persons than for courts and legislatures to prescribe for specific evils. In practice, nothing hardly is more difficult. Society is a complicated thing; the working of the human will cannot be foretold and compassed by law. In the reign of Charles II., of England, a statute was passed to prevent frauds and perjuries, one of the leading features of which required the purchaser of land to sign a memorandum or contract of his purchase. Unless this was done he could not be compelled to take it. Another feature of the law required the delivery of goods to hold the purchaser. The statute is simple enough in form and was enacted for the best possible reason, to suppress fraud, but it has been the spring of contention in thousands of cases, and long ago Judge Story remarked that perhaps it had been the means of enabling persons to perpetrate more fraud than it had prevented. In defining the duties of employed and employer the experience of the courts in this country and in England for the last fifty years proves that the subject is one of great difficulty, and no legal enactment, however carefully matured, can define their duties very clearly. Legislatures can indeed do something; favored by the decisions of the courts they can perhaps establish more just relations than now exist, but let no one think that any statute will prove a specific, will end litigation, or prove a much superior light to any now existing. The establishing of just legal relations among men is slowly done, though no work is more necessary or constantly attempted. The lesson of the past should teach all that, with the best intentions and most intelligent consideration of the subject, progress must be very slow; and that any attempt to change radically the relations that have been already established by common law or usage between employed and employers is likely to end in failure. If the history of society teaches anything it is that every attempt of this character results in the ignoring of the laws, or in finding some way to defeat or to change them. One of the glories of the common law is that it can be moulded to apply to the ever-varying needs of society. Statutes are of a harder, less yielding character, and are, therefore, not so easily adapted to social needs. It is, therefore, a question of the highest importance, in dealing with many of the evils of society, whether remedies should be prescribed by statute, in a hard unyielding form, or whether more effective rules and remedies cannot be provided and applied by courts. The answer to this qustion obviously depends on the character of our legal tribunals. If judges are wisely chosen, can we not leave the establishing of rules or remedies for the more common evils of society to them with a better-grounded confidence than to legislatures? Certainly they ought to have a better knowledge of the evils, and of the remedies that ought to be applied than legislative bodies, composed, as they chiefly are, of men who

have bestowed very little thought on such things. On the other hand, if judges are unwisely chosen, the results are disappointing; but, even if they were to administer statutes, they might practically set them aside. No one familiar with the administration of the statute of frauds and perjuries will question that some of its chief provisions have been annulled again and again by the courts while professing to observe and respect them. In the review of the decisions by the supreme court of this state, defining the relations of employed and employer, it must clearly appear to every thoughtful person how difficult, nay impossible, it would have been to devise a code of laws covering this field of inquiry, over which the judges have traveled during the last forty years. The earliest decision in this state was in 1853, and since that time a long procession of cases, involving the liability of employers to their employes, have come before the highest court of Pennsylvania for final determination. Perhaps the court has erred on some occasions, but we think no one will question that the attempt of a legislature forty years ago to enact a code of laws defining the duties of employers would have been a failure. Perhaps now, in the light, though not always steady, of the decisions that have been rendered, and the legislation enacted by other states, the duties and liabilities of employes and employers may be more clearly defined by statute. And if this can be done, surely it ought to be; at least it is worth while to show what has been already accomplished here and elsewhere, and thus obtain an intelligent comprehension of the subject; and after that consider what may be done in the way of improving these relations; what should be done by the legislature, and what discretion or authority should be confided to the courts.

7. It is true that the establishing of one rule might cut the knot almost perfectly—to make the employer liable in every case—but only a few persons have ever contended that such a rule ought to be established, and its injustice is too obvious to require consideration. Anything short of this, in the way of a rule, whether established by the legislature or the courts, is incomplete, not covering every case. The cause of future accidents cannot be foreseen, and so long as such knowledge is withheld from men it is impossible to establish rules for future application that will work perfectly or require no modification. If this statement be correct, should not some of our reformers be more modest in their demands than they have been? Ought they not to realize the fallibility of human judgment; the impossibility of providing by statute a rule of liability for all accidents that occur in the daily concerns of life?

8. The first controversy arose in England in the year 1837. A butcher named Fowler employed Priestly, and on the occasion of the accident which kindled this unending source of litigation, requested him to go with some goods in a van belonging to himself, but which

was conducted by another servant. Priestly went as requested, but the van was overloaded and broke down, and Priestly was thrown off, sustaining severe injuries. He sued Fowler and the court decided, Lord Abinger rendering the decision, that he was not liable. The reasoning on which this decision was founded may be given:*

"If the master be liable to the servant in this action, the principle of that liability will be found to carry us to an alarming extent. He who is reponsible by his general duty, or by the terms of his contract, for all the consequences of negligence in a matter in which he is the principal is responsible for the negligence of all his inferior agents. If the owner of the carriage is therefore responsible for the sufficiency of his carriage to his servant, he is responsible for the negligence of his coachmaker, or his harnessmaker or his coachman. The footman, therefore, who rides behind the carriage, may have an action against his master for a defect in the carriage, owing to the negligence of the coachmaker, or for a defect in the harness, arising from negligence of the harness-maker, or for drunkenness, negligence or want of skill in the coachman; nor is there any reason why the principal should not, if applicable in this class of cases, extend to many others. The master, for example, would be liable to the servant for the negligence of the chambermaid, for putting him into a damp bed; for that of the upholsterer for sending in a crazy bedstead, whereby he was made to fall down while asleep and injure himself; for the negligence of the cook in not properly cleaning the copper vessels used in the kitchen; of the butcher in supplying the family with meat of a quality injurious to the health; of the builder for a defect in the foundation of the house, whereby it fell and injured both the master and the servant by the ruins. The inconvenience, not to say the absurdity, of these consequences affords a sufficient argument against the application of this principle to the present case. But, in truth, the mere relation of the master and the servant never can imply an obligation on the part of the master to take more care of the servant than he may reasonably be expected to do of himself. He is no doubt bound to provide for the safety of his servant, in the course of his employment, to the best of his judgment, information and belief. The servant is not bound to risk his safety in the service of his master, and may, if he thinks fit, decline any service in which he reasonably apprehends injury to himself: and in most of the cases in which danger may be incurred, if not in all, he is just as likely to be acquainted with the probability and extent of it as the master."

Thirteen years afterward the question was raised by the York, Newcastle & Berwick R. Co. (5 Exch. 343), and the court reaffirmed the previous decision on the subject.

9. In the United States this question was first answered by the Supreme Court of South Carolina, in the case of Murray *v.* South Carolina R. Co. (1 McMullan, 385). The decision was rendered only a year after the first English case already described. The American judges knew nothing of the English decision at the time of rendering their own. The Murray suit was brought by a fireman for an injury which happened to him through the negligence of an en-

* Priestley *v.* Fowler, 3 Ex. 1.

gineer with whom he was associated in running the engine. The reasoning of the court in this case may also be briefly given. In a concurring opinion Chancellor Johnson remarked:

"The foundation of all legal liability is the omission to do some act which the law commands, the commission of some act which the law prohibits, or the violation of some contract by which the party is injured. There is no law regulating the relative duties of the owners of a steam-car, and the persons employed by them to conduct it. The liability, if any attaches, must therefore arise out of contract. What was the contract between these parties? The plaintiff, in consideration that the defendants would pay him so much money, undertook to perform the service of fireman on the train. This is all that is expressed. Is there anything more implied? Assuming that the injury done was in consequence of the negligence of the engineer, the defendants would not be liable unless they undertook to answer for his diligence and skill. Is that implied? I think not. The law never implies an obligation in relation to a matter about which the parties are or may, with proper diligence, be equally informed. No one will ever be presumed to undertake for that which a common observer would at once know was not true. The common case of the warranty of the soundness of a horse, notoriously blind, may be put in illustration. The warranty does not extend to the goodness of the eyes, because the purchaser knew, or might have known, with proper care, that they were defective. Now the plaintiff knew that he was not to conduct the train alone. He knew that he was to be placed under the control of the engineer. He knew that the employment in which he was engaged was perilous, and that its success was dependent on the common efforts of all the hands; and with proper diligence and prudence he might have been as well, and it does not follow that he might not have been better informed, than the defendants, about the fitness and security of all the appointments connected with the train. If he was not, it was his own want of prudence, for which defendants are not responsible. If he was, he will be presumed to have undertaken to meet all the perils incident to the employment."

10. Four years afterward, in 1842, the question came before the highest court of Massachusetts (Farwell *v.* Boston & Worcester R. Co., 4 Met., 49). An engineer sued to recover for an injury occasioned by the carelessness of a switch-tender employed by the same company. The reasoning in his case has been very generally followed by the American courts, and therefore will be presented:

"In considering the rights and obligations arising out of particular relations, it is competent for courts of justice to regard considerations of policy and general convenience, and to draw from them such rules as will, in their practical application, best promote the safety and security of all parties concerned. This is, in truth, the basis on which implied promises are raised, being duties legally inferred from a consideration of what is best adapted to promote the benefit of all persons concerned, under given circumstances. * * * Where several persons are employed in the conduct of one common enterprise or undertaking, and the safety of each depends much on the care and skill with which each other shall perform his appropriate duty, each is an observer of the conduct of the others, can give notice of any mis-

conduct, incapacity, or neglect of duty, and leave the service if the common employer will not take such precautions, and employ such agents as the safety of the whole party may require. By these means the safety of each will be much more effectually secured than could be done by a resort to the common employer for indemnity in case of loss by the negligence of each other. Regarding it in this light, it is the ordinary case of one sustaining an injury in the course of his own employment, in which he must bear the loss himself, or seek his remedy if he have any, against the actual wrongdoer."

11. The question was not raised before the supreme court of this state until 1854, when Ryan *v.* Cumberland Valley R. Co. was decided (23 Pa. 384). Ryan and several others were employed by the company to repair their road, and in doing so used gravel cars which could be dumped on either side, and which were moved by locomotive power. Ryan boarded in Chambersburg, four miles distant from his place of work, and was riding in one of these cars at the time of the accident. He was not a passenger and did not attempt to recover on that ground. He was injured by the dumping of one of the cars, which was not properly secured. He maintained that it was the duty of the engineer or conductor to have secured the cars properly before starting. The opinion of the court was delivered by Mr. Justice Lowrie. After remarking that Ryan did not sue in the relation of a passenger, but as a servant injured by the carelessness of a fellow servant, he proceeded to discuss the grounds of recovery. The judge continued:

"This alleged duty did not grow out of any contract between the plaintiff and the defendants, else the contract would have been charged as an essential and relevant bond of their relation, which has not been done. If it was a duty which the engineer owed to the plaintiff in any way, then the action ought to be against him for the breach of it. If he owed it to the defendants, then they alone can complain of its non-performance. The duty must therefore be alleged as that of the defendants to the plaintiff. In what form shall we put it, or how shall we define it? Is it that, when persons are employed to work for others, the employers are bound to see that the instruments of their work are and shall continue in a condition to be used with safety? Then the coachman, the wagoner and the carter, who ought to know more about the vehicles which they use than their employers do, have a practical warranty that they are in good order, though practically we know that many of them are nearly worn out; the wood-chopper and the grubber are insured that their axe or mattock shall not injure them by flying off the handle; the engineer, the miller, the cotton-spinner, and the wool-carder have a guarantee for the accidents that may befall them in the use of the machinery which they profess to understand, and which they ought so to understand as to be able to inform their employers when it is out of order.

"If this be so, then the care and skill required of workmen is reduced very much below what is ordinarily expected of them. If there be any distinction between any of the cases put and the one in hand, it is too narrow to be made the foundation of a new rule, or to cancel the force of the analogy which they afford. Certainly such a duty has

never been considered as belonging to these relations, and therefore it cannot be law.

"The only way left for defining the supposed duty is to allege that employers are liable when any of those employed by them are injured by the carelessness of their fellow laborers. Though this proposition has never been decided upon by this court, it has often been considered elsewhere and decided in the negative, and we know but one case which seems to affirm it. * * *

"But it must be conceded that many of the relations of life are instituted in the most general terms, and that the special duties of each party are so well understood in society that they are left entirely undefined in the contract, and each is presumed to have undertaken them without their being formally specified. Certainly no one will pretend that the duty here insisted upon has, in this way, become part of this contract; for no one so understands it, and no one would so contract if requested.

"There is, therefore, no way left but to allege that the law has made it a duty of a master to see that his servants do not injure each other by their carelessness. There is no statute of this purport; and, therefore, the allegation must be that it is a part of the common law. But the common law consists of the general customs of the people, and of the maxims and principles on which they act; and it is conclusive against the rule contended for that it has never been found among these, and is not deducible from them.

"But the duty insisted upon is substantially one of protection, which cannot exist without implying the co-relative one of dependence or subjection. The relations of husband and wife, parent and child, are in law relations of protection and dependence; and there are those which are so in fact, as where a weak-minded person submits himself to the direction of another; and here the law interferes to protect against an undue exercise of influence and power. And there are others, as the Sunday laws and the laws regulating the hours of labor in particular occupations, whereby the law protects men against the danger arising from undue competition; but the strictness used in defining this relation, as belonging to special cases, implies that it has no wider existence.

"There is no relation of protection and dependence between master and servant, or of confidence in the institution of the relation; we speak not of master and apprentice. The servant is no Roman client or feudal villein, with a lord to protect him. Both are equal before the law, and considered equally competent to take care of themselves, and very often the servant is the more intelligent of the two.

"The argument that the law implies a warranty that one servant shall not be injured by the carelessness of another, is only another way of stating the proposition that the law imposes the duty of protection; and it must be set aside by the same answer.

"And what would be the value of such a rule? If it exists at all, it must grow out of the relation and affect all persons standing in it; and this would change all our ideas concerning the relation of master and servant. Every man must have his own business, whether as master or as servant, and there is no business without its risks. Where many servants are employed in the same business, the liability to injury from the carelessness of their fellows is but an ordinary risk, against which the law furnishes no protection but by an action against the

actual wrongdoer. It would violate a law of nature if it should provide an immunity to any one against the ordinary dangers of his business, and it would be treating him as incapable of taking care of himself.

"If we declare that workmen are warranted against such carelessness, then the law places all careless men, which means all badly-educated or badly trained men, and it places even those who have not acquired a reputation for care, under the ban of at least a partial exclusion from all work. And this is the ordinary result of all undue attempts to protect by law one class of citizens against another. It is done at a practical sacrifice of liberty on the part of those intended to be protected, and to the embarrassment of the common business of life, by imposing upon the people a rule of a new and unusual character which may require half a century to become fitted like a custom, and adapted to the customs already existing which it does not have the effect of annuling."

12. A short time before establishing this principle in the Ryan Case the court of common pleas for Huntingdon county had rendered a similar decision (Mitchell *v.* The Pensylvania R. Co., 1 Am. Law Reg. 717). President Judge Taylor thus stated the rule: "The whole current of reported cases is to the effect that one employe or servant has no right against the principal or master for an injury sustained through the negligence of another employe or servant in the same service." Judge Lowrie, in the district court of Allegheny county, a few months previously had decided the question in the same manner (Strange *v.* M'Cormick, 10 Am. Law Journal, 398).

13. Such is the reasoning of the highest state tribunal. The decision was rendered nearly forty years ago, and the question has been reviewed many times since in this and other states. Everywhere the courts have uniformly maintained the same opinion. Surely these decisions, rendered so frequently, must be regarded as founded on strong reasons. As every one knows, the judges of the highest courts are not so irrevocably bound by their decisions that they must follow them when convinced of their unsoundness. Occasionally they do establish a different rule, yet the fact is worth noting, that notwithstanding the numerous occasions for reconsidering this question since it was first presented to the courts, they have steadily adhered to the rule established in the beginning.

14. It may be worth while to consider briefly what would have happened if the courts had established a different rule of liability. Probably one of the earliest consequences would have been an attempt on the part of employers to escape liability by making a special contract of exemption. In other words, had the courts declared that they were insurers of the skill of their employes, and therefore liable for injuries occasioned by their unskilfulness, they would have sought to relieve themselves from this liability by a contract in writing. Indeed, in the case of Mitchell *v.* The Pennsylvania R. Co., which was tried

before the common pleas of Huntingdon county (1 Am. Law Reg. 717), the railroad company had placed in the hands of their employes a printed book of regulations to which they were required to conform when accepting employment. One of these provided that "the regular compensation will cover all risks or liability from any cause whatever, while in the service of the company." President Judge Taylor decided that this was an express contract between the parties, and that, as a consequence, the employer was relieved from liability to the employe happening from any cause whatever while employed by the company. He fortified his decision by the English case of Austin *v.* Manchester, S. & R. Co. (70 Eng. Common Law, 454). Doubtless the judge believed that the more lenient rule of liability, which had been established for carriers, might be extended to employers. The courts at one time had gone so far as to permit them, by special contract, to exempt themselves from all liability save gross negligence.* But they withdrew from this extreme position, foreseeing the danger of permitting carriers to exempt themselves to this degree. In a recent case (Crew *v.* The Bradstreet Co., 134 Pa. 161, 169), Mr. Chief Justice Paxson remarked that "contracts against liability for negligence are not favored by the law. In some instances, such as common carriers, they are prohibited as against public policy. *In all cases*, such contracts should be construed strictly, with every intendment against the party seeking their protection." Had employers been declared always liable to an employe for the negligence of another employe in the same employment, would not public policy as clearly have forbidden their exemption therefrom as the exemption of common carriers? In truth the Supreme Court of Ohio has plainly declared that this cannot be done (Railway Co. *v.* Spangler, 44 Ohio St. 471). The Wisconsin legislature in 1875 forbade railway companies from making such exemptions (Rev. Stat., sec. 1816), and so did the Texas legislature in 1891. (See page 130 for Act.) Mr. Justice Lowrie, though, remarked in the Ryan Case (23 Pa. 384,388) that if employers were regarded liable to an employe for the negligence of a fellow employe "such a rule could have very little application to great corporations, for they would immediately act on the maxim *conventio vincit legem*, and provide against it in their contracts." Even if this right to exempt themselves was conceded or granted, their liability for the consequences of their own direct negligence would remain. And no court, we believe, has ever sanctioned such an exemption except that of

*In Beckman *v.* Shouse 5 Rawle 179, 189 (1835), Rogers, J., remarked that common carriers could limit their responsibility by contract, yet they could not by any "special notice or agreement free themselves from all responsibility, particularly where there is gross negligence or fraud." This doctrine was reasserted in Bingham *v.* Rogers, 6 W. & S. 495, and Atwood *v.* Reliance Trans. Co., 9 Watts 87. But the rule was somewhat modified in Laing *v.* Calder, 8 Barr 479, 484, and still further in Camden & Amboy R. Co., *v.* Baldauf, 16 Pa. 67.

employers to their employes. The invasion of this universal rule will be hereafter considered, and is one of the most curious inconsistencies in our jurisprudence.*

15. Again, supposing that special contracts had been permitted, narrowing the liability of employes, what would have been their effect on the rate of wages? The theory of absolving carriers from liability to shippers of goods is that they carry them at a reduced rate when relieved from the responsibilty of insuring their safe transportation and delivery. But if they were not permitted to diminish by contract with their employes their liability to them, would not the rate of wages have been lessened? Or, to reverse the idea, if the courts had decided in favor of the employes in the first instance, and against their employers, would they not have sought to save themselves from the consequences by reducing the rate of wages? Surely we may believe they would have attempted this; for no law could have prevented such action.

16. What would have been the conduct of employers in selecting men if this rule had been established? Would they not have exercised greater care, selecting only the more skilful and declining to employ others? Again, would not such a policy have resulted in the exercise of more care and skill by employes in order to secure and retain employment? All these effects, beside others, might have happened had a different rule of liability been established.

17. On what gounds does this principle rest, that a workman cannot recover from his employer for injuries sustained by the negligence of a fellow workman? Though contained in the reasoning of the courts in some of the cases mentioned, the ground may be seen more clearly, perhaps, if put in a re-statement. Mr. Justice Read, who delivered the opinion of the court in Caldwell *v.* Brown (53 Pa. 453, 456), quoted with approval the remarks of Mr. Justice Gray, in Gilman *v.* Eastern Railroad Corporation (10 Allen, 233), who said: "A servant by entering into his master's service assumes all the risks of that service which the master cannot control, including those arising from the negligence of his fellow servants." And more recently Mr. Justice Paxson has said: "That rule rests upon the sound principle that each one who enters upon the service of another, takes on himself all the ordinary risks of the employment in which he engages, and that the

*In Louisville & N. R. Co. *v.* Orr, the Supreme Court of Alabama declared that "railroads cannot stipulate for immunity from liability for their own wrongful negligence. A rule which imposes upon an employe to look after and be responsible for his own safety contravenes the law itself, which fixes the liability for railroads for negligence causing injury or death to their employes."—8 South. Rep. 360; Richmond & Danville R. Co. *v.* Jones, 9 Id. 276. In Chicago, etc., Coal Co. *v.* Peterson, 39 Ill. App. 114, it was held that it was against public policy to allow the provisions of a statute relating to the care an employer must exercise in protecting his employes from personal injury to be dispensed with by contract. But an employe may release his employer from liability on the payment of a sum of money for an injury occasioned by his negligence.

negligent acts of his fellow workmen in the general course of his employment are within the ordinary risks" (Lewis *v.* Seifert, 116 Pa. 646). And likewise, Mr. Justice Green has remarked: "If the risk is an ordinary one the employer is not liable even if the employe did use ordinary care. In all such cases the risk of injury is one of the hazards which the employe assumes when he engages in the service to which it is incident. This has always been the law."* (Northern Central R. Co. *v.* Husson, 101 Pa. 1, 7.)

Moreover, the workman through whose negligence another has sustained an injury is liable. The law does not leave the injured person remediless, and imposes the damage on the author of the accident or loss.† As will be seen hereafter, the employer is liable for the consequences of his own direct act; why should not the workmen be for their own? ‡

18. We think a better reason has been given for the non-recovery by an employe from his employer, for the consequences of a negligent act by a fellow employe. Employes will exercise more care in doing their work if the consequences of their negligence cannot be put on their employers than they would if a different rule of liability existed. If the end of the law should be to secure the greatest security to life and health, assuredly it is plain that if the law renders the negligent person responsible for the consequences of his neglect, a greater degree of care is likely to be exercised than would be if the consequences of one's negligence could be imputed or charged to another.

19. In assuming the ordinary risk of his employment an employe does not assume an extraordinary one. For example, the risk of falling into an uncovered opening in a floor. Thus, an employe (Hoffman *v.* Clough, 124 Pa. 505) who had charge of a carding machine in a cotton mill was injured by falling into an opening in a floor in a dark passage-way near his machine, of which he had no knowledge. His employer claimed that he assumed the risks of his employment, and that this was one of them. The supreme court, speaking through Mr. Justice Williams, declared that the risk of falling into an uncovered opening in the floor, having no possible connection with the business carried on at the factory, could hardly be said to belong to

*"The plaintiff [an employe] will be understood to have assumed not only all the risks incident to his employment, but also those arising from the negligence of his fellow employes in the same circle of employment."—Mr. Justice Clark, Phila. & Reading R. Co. *v.* Hughes, 119 Pa. 301, 312. For other cases see Patterson *v.* Pittsburgh & Connellsville R. Co., 76 Pa. 389, 393; Pittsburgh & Connellsville R. Co. *v.* Sentmeyer, 92 Pa. 276; Baker *v.* Allegheny Valley R. Co., 95 Pa. 211; Campbell *v.* Pennsylvania R. Co., 3 East. Rep. 826; Strange *v.* McCormick, 10 Am. L. Jour. 398.

†In Ross *v.* Walker, 139 Pa. 42, 50, which was a case of an employe against an employer, Williams, J., remarked that "all his workmen are liable to each other for the consequences of their negligence." And in Baker *v.* Allegheny Valley R. Co., 95 Pa. 211, 215, Sharswood, J., said: "If it has resulted from the negligence of a fellow servant in the same employment, he must look to him and not to the master for redress." Ryan *v.* Cumberland Valley R. Co., 23 Pa. 384, 387.

‡Griffiths *v.* Wolfram, 22 Minn. 185; Osborne *v.* Morgan, 130 Mass. 102; McKinney on Fellow Servants. § 11.

the class of risks to which the rule related. "The dangers incident to the business of operating a carding-machine, reasonably suitable for the work to be done, were assumed when the employe entered upon his work; but dangers from an opening in the floor, from an insufficient staircase, or other defect in the building, were incident to the place where the business was conducted," were of a different nature and were not included in those assumed by the employe. Nevertheless he could not recover for the reason that the cover had been removed from the hole in the floor through the negligence of another co-employe for whose negligence the employer was not responsible.*

20. This ground, however, has been so broadened that not only are all ordinary risks covered, but also all (1) that are open or obvious, or (2) that may happen and cause no serious consequences by the exercise of ordinary observation and care.† An illustration of an open or obvious risk which an employe assumes when undertaking his employment is the Bresmer Case (Green & Coates Street Pass. R. Co. *v.* Bresmer, 97 Pa. 103, 106), in which Mr. Justice Mercur thus states the rule: "A servant assumes the risk naturally and reasonably incident to his employment. He is not bound to risk his safety in the service of his master, and may, if he thinks fit, decline any service in which he reasonably apprehends injury to himself.‡ Inasmuch as the relation of master and servant cannot imply an obligation on the part of the master to take more care of the servant than he may reasonably be expected to take of himself, he cannot complain if he is injured by exposure, after having the opportunity of becoming acquainted with the risks of his employment, and accepts them." In this case Bresmer was injured by the kick of a horse owned by the company while performing his duty as hostler. The undoubted evidence showed that he had full knowledge of the vicious habits of the mare which kicked him. "She had kicked others," said the court, "and her reputaton was well known to the persons employed in the stables, and they were warned to guard against being injured by her. * * * No duty was imposed on the company to inform him of what he so well knew, nor to forbid his grooming the mare. He voluntarily assumed the risk, and continued to expose himself to a well-known danger. He cannot now cast on his employer a liability for the injury which he thereby suffered. It matters not that the master did know the vicious

*For other cases, see Campbell *v.* Pennsylvania R. Co., 3 East. Rep. 826; Beittenmiller *v* Bergner & Engel Brewing Co., 12 At. Rep. 599.

†Philadelphia, Wil. & Balt. R. Co. *v.* Keenan, 103 Pa. 124; Rummell *v.* Dilworth, 111 Pa. 343, 349: Schall *v.* Cole, 107 Pa. 1; Kelly *v.* Baltimore & Ohio R. Co., 11 At. Rep. 659; Oak Ridge Coal Co. *v.* Reed, 5 W. N. Cas. 3; Bemisch *v.* Roberts; 28 W. N. Cas. 169.

‡Hayden *v.* Smithville Manfg. Co., 29 Conn. 548; Mad River & Lake Erie R. Co *v.* Barber, 5 Ohio St. 541; Whart. on Neg., § 217.

habits of the mare. It is the knowledge of the servant which withholds from him the right of action."*

21. Afterwards, in Sykes *v.* Packer (99 Pa. 465, 468), Mr. Justice Mercur said: "An employer does not impliedly guarantee the absolute safety of his employe. In accepting an employment the latter is assumed to have notice of all patent risks incident thereto, of which he is informed, or of which it is his duty to inform himself. When, therefore, he undertakes hazardous duties he assumes such risks as are incident to their discharge from causes open and obvious, the dangerous character of which causes he has had opportunity to ascertain. The master is bound to provide for the safety of his servant to the best of his judgment. In most cases in which danger may be incurred, the servant is as likely to be acquainted with the probability and extent of it as the master. The latter is, therefore, not responsible for the damages attendant on the mounting of scaffolds, or unfinished staircases, landings or roofs, which the workman has voluntarily undertaken to mount, with as much knowledge of the attendant risk as the person who employs him." In this case a builder, who was himself employed in erecting an iron structure, engaged a laborer to assist him. When several of the rafters had been put in place, the builder, by the advice of an experienced rigger, directed some tackle supporting the building to be removed. Shortly after the builder, who was aloft on the roof, asked the laborer to assist him, and, knowing nothing of the removal of the tackle, he went. While working together the building fell and the laborer was seriously injured. In an action against the builder to recover damages for the injury, the court charged the jury that if the employer caused the removal of a support essential to keep the building in position, without notifying his employe, and he did not know of the removal, that it was an improper thing for him to do and that he was, therefore, guilty of negligence. A judgment having been rendered for the employe, Mr. Justice Mercur, in reviewing the case remarked that "the defendant had as good an opportunity of seeing the condition of the tackle as any other employe had. He must be held to have known what was clearly visible to his sight. It was not necessary that he should be specifically informed of a fact so patent to him. It is not sufficient evidence of negligence that a jury has now found that it was improper to remove the tackle, judged by its effect. If an experienced rigger advised its removal, if the plaintiff in error assented to it in good faith, believing there was no danger in so doing, it was complying with the rule to provide for his servants to the best of his judgment. The true question as to this branch of the case is, what was then fairly and reasonably deemed prudent and safe. He took as much care for the safety of his servant as he took for his own

* Haskin *v.* New York Central R. Co., 65 Barb. 129; Frazier *v.* Pennsylvania R. Co., 38 Pa. 104.

safety (Green & Coates St. Pass. R. Co. *v.* Bresmer, 97 Pa. 103). In view of the unquestioned facts his omission to notify the employe of the removal did not constitute negligence."

22. An illustration of the risk which an employe is regarded as assuming from which he can protect himself by the exercise of ordinary care is the Sentmeyer Case (Pittsburgh & Connellsville R. Co. *v.* Sentmeyer, 92 Pa. 276, 280). Mr. Justice Gordon stated the extension of the ground of risk assumed by the employe in the following words: "The servant or employe assumes the risk of all dangers, however they may arise, against which he may protect himself by the exercise of ordinary observation and care." Sentmeyer was a brakeman, and was knocked off from the top of a car while the train was passing under a bridge that crossed the road, the existence of which was familiar knowledge to him. Moreover, it was shown that he need not have been there at the time of the accident. Mr. Justice Gordon thus remarked on the case: "Sentmeyer had been for several months previous to the accident employed as flagman on one of the trains of this road, and therefore had, or ought to have had, knowledge of the height of the cars used upon it and also of the height of this bridge. These were matters which addressed themselves to his own observation, and as we have already said, for the prudent exercise of that observation he was responsible. But did he give such attention to the dangers to which he was exposed as an ordinarily prudent man should have given to them? Certainly not, or the accident would not have occurred. He had, almost every day for a month, passed and repassed under that bridge; he knew just where to look for it, and if he paid any attention to it whatever he must have known that when standing at full length upon a car of medium height, say nine feet six inches, there was but an inch or two between the bridge and the top of his head. What shall we say, then, of that man's prudence who would thus risk his life on the difference of two or three inches in the height of a car? But the court below held the company rigidly to what it regarded as its duty in regard to the bridge, without any reference to the duty resting upon the deceased to give heed to a known and obvious danger and prudently to care for himself. * * * But what is the logical result of a doctrine such as this? Is it not that the company must not only guard its servants from probable, but also from possible dangers, and that it must place no dependence on their care and skill, even in the matter of their own preservation and personal safety? That it must provide against their very negligence and become an insurer of their limbs and lives? We need not say this will not do; that neither natural nor artificial persons can bear a burden such as this, neither ought they so to do.* When men are hired something must be predicted of their judgment and prudence, and hence,

*Bemisch *v.* Roberts, 143 Pa. 1.

when the employer furnishes them with tools and appliances which, though not the best possible, may by ordinary care be used without danger, he has discharged his duty and is not responsible for accidents."* In Carroll *v.* Pennsylvania Coal Co. (15 At. Rep. 688), the outer end of a track from which the company dumped coal was so defective that it could not be safely used. The operatives of the cars which ran over it knew of the danger, and were required and accustomed to use certain devices to prevent accident. Nevertheless, Carroll was killed, but in a suit by his representatives to recover it was decided that he had assumed the risks of the employment and, furthermore, was guilty of contributory negligence. In revivewing the case, Mr. Justice Green said: "The result of all the testimony is, and it is entirely undisputed, that the source of the danger was the depressed condition of the projecting end of the track; that this became immediately manifest to the men working the car; that the remedies to prevent injury were very simple, and were entirely in the hands of the men themselves, who, including the deceased workman, were in the constant habit of using them, and were under orders to do so. The case, therefore, was precisely as the court below held, one in which the deceased voluntarily assumed the risks of the employment; that they must necessarily have known the presence of danger the moment it arose; and that the plain and well-known remedy to prevent injury was entirely in their own hands. In these circumstances, the mere occurrence of the injury proves the contributive negligence of the men quite as much as it proves negligence on the part of the defendant; and, as the assumption of the risk of the employment was entirely voluntary, there can be no recovery."

23. In extending the risk assumed by the employe the courts have sometimes asserted that he probably received a larger compensation.* Of course, it is easy enough to imagine this. The doctrine would be very harmonious if the compensation varied with the risk. The law delights in these harmonies, but unfortunately they do not often exist, except in the reasonings of the courts and in the dreams of social philosophers. If a workingman applied for work in a shop, and was told that he might have it if he would run a planing machine, for example, which was not in very good order, we are certain that he would not receive a larger compensation to the extent of a single cent than other workmen engaged in similar tasks. And the reason is obvious. The employer would not make a new rate of wages, for if he did, a series of ill-consequences would follow. All doing the same kind of work must receive a similar price; to make different rates based on

*In Strange *v.* McCormick, 10 Am. L. Jour. 398 Lowrie, J., remarked: "The law very properly presumes that every man who undertakes a business understands the character of the business, and of the tools and machinery with which it is to be done; and on this account it is a fair presumption that he undertakes the risk for what he considers a sufficient compensation."

the varying condition of the machines, unless well understood differences existed between them in the quality and quantity of work produced, would cause perpetual dissatisfaction. The true situation generally may be easily described. A workingman applies for employment, and if the tools and machines are not in good order and perhaps unsafe, he will use them rather than decline the opportunity. Mr. Justice Mercur says, like so many justices before and since, "if the applicant does not like the situation he need not accept;" but this remark is more easily made by the judge from his comfortable seat on the bench than the truth of it can be realized by the applicant for employment. No, too often he cannot decline the opportunity without personal suffering. If the opportunities were numerous, then there would be some force in this reasoning; then, indeed, if assuming the larger risk he might be regarded as indifferent to his health or life. But, in truth, the pressure of personal suffering narrows his freedom of action, and he must usually accept whatever employment is offered. If he could decline to run machines that were unsafe, or to do any work that was more than ordinarily dangerous, then the extension of the risk as described would not be so serious; but since the workingman's freedom in this regard is, in most cases, very narrow, we think that this extension of his risk should not be regarded as voluntary, but often undertaken by the pressure of present or fear of future want. If this reasoning be correct, ought not the employer to be held to a stricter rule of duty? Ought he not to be required to have reasonably safe machines and tools at all times, whether his workmen insisted on this requirement or not? For, all will admit, that only such machinery and tools ought to be employed; but if the employer is relieved from responsibility whenever he uses defective and dangerous machinery with the knowledge of his employes, surely he will be less inclined to improve it, than he would be if he was rendered responsible for the consequences. One of the most potent forces to bear on him is to hold him responsible for the consequences to his employes for using tools, machinery or other apparatus which he knows is not reasonably safe, regardless of their wishes. If this path of escape was closed against him, and he was held responsible for the consequences of *knowingly* using defective or unsafe machinery, might we not reasonably hope that he would be more careful in selecting and maintaining it?

24. An important distinction must not be overlooked between an employment which is hazardous in its nature, like that of coupling cars, and an employment that is hazardous by reason of the negligence of the employer in not having suitable machinery or servants to operate it. So Mr. Justice Clark has said that if one "engages to perform a hazardous work he assumes the risks incident thereto (Rummell *v.* Dilworth, 111 Pa. 343; Phila. & Reading R. Co. *v.* Hughes, 119

Id. 301), but if the master by any negligent act not involved in or reasonably incident to that work, causes his servant to receive a personal injury, he is responsible therefor, if the servant did not otherwise contribute to the result, (Woodward *v.* Shumpp, 120 Pa. 458, 468)." Likewise in Johnson *v.* Bruner (61 Pa. 58, 61), Mr. Justice Williams said: "If [the injury] was the result of the hazardous nature of the employment, without any fault on the part of the master, he is not liable; but if his negligence was the direct and proximate cause of the injury, he is responsible whether the employment was hazardous or not."* And in a more recent case the supreme court declared that a servant who voluntarily undertakes a perilous employment, the dangerous character of which he understands or has the opportunity to learn, assumes the risk naturally and reasonably incident thereto, even though he is urged to perform the work by his master. In Diehl *v.* Lehigh Iron Co.† (140 Pa. 487), the person injured was employed to blast out "salamander" from the bottom of an iron furnace, and was directed to use dynamite for the purpose. He drilled a hole into the "salamander" and though knowing that it was red-hot at the bottom he inserted a dynamite cartridge, which instantly exploded and he was injured. It was shown that he knew the danger he was encountering and alone assumed the risk of inserting the blast. He failed to recover for injuries.

25. A still more questionable stretching of the risk assumed by the workingman occurred in Devine's Case against the Reading Iron Works (109 Pa. 246). When operating machinery the courts maintain that not only does he assume to know whether it is safe or unsafe, but also its effect on surrounding objects. This principle was worked out of the following facts: The injured person was employed to operate a new steam hammer. To complete the setting of the machine a large beam of timber was placed overhead as a support. By oversight or neglect this beam was not properly fastened, and the subsequent motion of the machine jarred the timber so that it fell on Devine and mortally injured him. Mr. Justice Gordon, who delivered the opinion of the court, remarked, that "whilst the master is bound to furnish his servant with appliances which can be safely used in and about the work he is required to do, yet a duty also rests upon the workman to see to his own safety. Devine was a hammerman, and we must infer that he knew the effect his hammer was likely, by its jarring, to produce upon surrounding objects, and that it was his business to see that not only this hammer, but all things about it, were safe. Clearly

*See Titus *v.* Bradford, etc., R. Co., 136 Pa. 618, 626; Northern Central R. *v.* Husson, 101 Pa. 1.

†The court cited Green & Coates St. Pass. R. Co. *v.* Bresmer, 97 Pa. 103; Sykes *v.* Packer, 99 Pa. 465; Phila. & Reading R. Co. *v.* Hughes, 119 Pa. 301; Beittenmiller *v.* Bergner & Engle Brewing Co., 22 W. N. Cas. 33; Mansfield Coal & Coke Co. *v.* McEnery, 91 Pa. 185; New York, L. E. & W. R. Co. *v.* Lyons, 119 Pa. 324.

the presumption is not too violent that one who professes to know how to use a tool, knows also whether it is safe or unsafe. So we may presume that he understands the effect that the working of such a tool is likely to have on things in its vicinity. Who, then, ought to have known, if Devine did not, the effect the jarring of the hammer would have on the beam above his head?" As he was warned of his danger he ought to have exercised more care than he did; but the doctrine of the court, that a person who is operating a machine ought to know its effect on surrounding objects, is certainly carrying the requirement of skill on the part of the workman very far. Unless having actual knowledge a workman has no reason for supposing that timbers and other machinery in a mill where he is working are improperly secured. Does not the rule requiring employers to have their machinery in a reasonably safe condition require them to guard, to a reasonable extent, against dangers of this kind? As, however, Devine had been expressly warned of the danger, the employers were properly relieved from responsibility. This feature of the case will be considered elsewhere.

26. We will now review the cases in which employes have sought to recover for injuries sustained by them, and in which this rule of exemption from liability has been invoked by their employers to defeat a recovery.

27. The first case to be described is O'Donnell *v.* Allegheny R. Co. (50 Pa. 490), in which he was injured while riding in a baggage car from his home to his place of work. He was employed as a carpenter. He sought to recover on the ground that he was riding as a passenger. He tried to prove that for the privilege of riding in going to and from his work he assisted in loading and unloading freight. The jury awarded him two hundred dollars damages. He appealed to the supreme court for a new trial, which was granted, Mr. Chief Justice Woodward, who delivered the opinion of the court, saying: "It was a primary and fundamental question in the cause whether the plaintiff was a passenger, entitled to all the rights of a safe transit which belong to passengers, or whether he was a servant of the company, in such a sense as to preclude an action at law for a personal injury to himself resulting from the negligence of other servants of the company; and on this question the rejected evidence ought to have been received. It tended to prove that though in the service of the company, he was by original contract a daily passenger on their road; that he was not out of place in the baggage car, but was there in pursuance of the road; and that, besides the original contract, there was a consideration rendered by him for his ride, in helping to take in and discharge freight. Had the jury been convinced that he was a paying passenger, it is fair to presume that he would have recovered a larger verdict. They must have regarded him as sustaining a relation to the

company something more than a mere servant, else they could not have found for him at all under the instructions given them by the court; and as his right of recovery, and to some extent the amount of the verdict, depended on a clear definition of that relation, whatever evidence tended to elucidate it was relevant and very important. If he was in fact a passenger who had paid for his transportation, he was entitled to the benefit of the fact and all of its legal consequences. The cause must go back to secure to him this right."

28. The case was tried a second time* before the jury and a verdict was rendered for the company, but this judgment was reversed by the supreme court for the reason that O'Donnell ought not to be regarded as a fellow servant, in the same general service with the hands who ran the train or repaired the road. He was a passenger.† The case, therefore, will be more fully considered when ascertaining who are fellow workmen or servants.

29 In Weger *v.* Pennsylvania R. Co. (55 Pa. 460,465), the plaintiff's husband was killed while riding on a hand-car in going to his place of work. He was a tender to stonemasons who were employed by the railroad company, under a foreman named Wilber. There was evidence that Wilber told the men to take the hand-car for that purpose, and that they had time to avoid a train that was soon expected. The men went, the morning was foggy, the train struck the hand-car and Weger was killed. It was proved that Wilber's watch was five or six minutes slower than the railroad time. Mr. Justice Read, who delivered the opinion of the court, said: "It seems to be now perfectly well settled in England, and in mostly of this country, that a servant who is injured by the negligence or misconduct of a fellow servant can maintain no action against the master for such injury. But it seems to be conceded that if there be any fault in the selection of the other servants, or in continuing them in their places, after they have proved incompetent, perhaps, or in the employing unsafe machinery, the master will be answerable for all injury to his servants in consequence. The law thus clearly stated by Judge Redfield in his Law of Railways is the rule in Pennsylvania and governs the present case. The deceased was killed (taking the evidence in its strongest light) by the negligence of his fellow employe, and the only bond between them was that they were servants of one common employer. The company,

*59 Pa. 239.

† "The plaintiff, O'Donnell, traveled not as a part of his employment as a carpenter at the bridge, but as a passenger from and to his home. He was not hired to pursue his business on the train, but was carried in consideration of a reduction in the price of his wages. When his day's work was performed he was no longer in the service of the company, but was free to go or to stay, and when he traveled in effect paid his fare out of his wages. Myers *v.* Cumberland Valley Railroad Co., 38 Pa. 384, is more directly in point. Thereon, as soon as Myers had performed the special act he had undertaken to do, which on the first writ of error was held to place him in a temporary relation of service, and had returned to his stand on the platform, his relation as employe ceased, and it was held he was entitled to the protection of a passenger."

therefore, was not liable for the death of their employe. Nor was there any proof that Wilber (the servant alleged to be in fault) was either unskillful or negligent. 'On the contrary,' says Judge Pearson, who tried the case in the court below, 'the only evidence in the case shows that he was reputed and known as both careful and vigilant.'"

30. In Philadelphia Iron & Steel Co. *v* Davis (111 Pa. 597), the employe was injured by the negligence of an engineer in running a machine after a break happened of which he had knowledge, and which lessened its safety. He tried to show that the machine was defective in the beginning, but did not succeed. He did not recover because his injury was due to the engineer's negligence in running the machine after he knew what had happened to it. There was no contributory negligence for though the person injured knew of the defect, the breaking of a clamp, he did not suppose that this would produce a serious result.

31. Another case, Caldwell *v.* Brown (53 Penn. 453), was an action to recover damages for the death of an operative in a mill which was caused by the bursting of a boiler. It was contended that the engineer was negligent. There was some evidence that the boiler had been removed by former owners of the mill, that it had been exposed to the weather for several years, and that it had been repaired and replaced a few weeks before the explosion. There was evidence also that the water was permitted to fall too low in the boiler: that the engineer was told that this was dangerous, and that an engineer can tell whether there is sufficient water in a boiler or not. There was also evidence on the subject of the character and capability of the engineer. The jury rendered a verdict for $200, but the plaintiff desired more. The supreme court discovered no error in the proceedings, and declared that an application of the foregoing principle forbade a recovery.

32. In Allegheny Heating Co. *v.* Rohan (118 Pa. 223), the plaintiff sought to recover for an injury occurring from the explosion of gas from a pipe near which he was working. He sought to show that the company was negligent in not having better methods to secure the gas from leaking. The court decided that the company was not negligent in this regard. Furthermore, if there was any negligence, it was that of a co-employe in lighting his pipe contrary to the express directions of the foreman, which caused the explosion. For such negligence the company was declared to be not liable.

33 The case of Anderson *v.* Oliver (138 Pa. 156,) may next be reviewed. The plaintiff was a laborer at a furnace and was injured when unloading a car in consequence of a defective brake that was attached thereto. He sued his employer. Mr. Chief Justice Paxson thus commented on the case: "It was alleged that the injury was caused by a defective brake on one of the cars. The running forward

and unloading of the cars was done by laborers at the furnace, all of whom were under the control of the labor boss. If the accident was the result of the negligence of any of the laborers in handling the cars, the plaintiff cannot recover because they were his co-employes. If it was owing to a defective brake, the defendants are not responsible, because they did not own the cars, and had no control over them further than to unload them. They belonged to the railroad company. In either view of the case the plaintiff cannot recover."

34. In Mulherrin *v.* Del., Lack. & Western R. Co. (81 Pa. 366), the plaintiff was injured, while on his way to his train, by the engine of another company that was using the track. He was regarded negligent in going on the track to his work. After showing that persons have no right to be on the tracks except at crossings, Mr. Justice Paxson continued: "These remarks do not, of course, apply to employes of railroad companies whose duties require them at certain times and for certain purposes to be upon the track. They go there in the course of their employment, and under the well-settled rules of the law they take the risk. In cases of personal injury they have no redress against the company employing them, and by the act of whose servants it is occasioned. In this case the plaintiff was not in the employ of the defendants, but was a brakeman of the Lackawanna and Bloomsburg Company. The evidence clearly shows that he was not necessarily on the track when he was struck by the train. He got off his train to perform a duty, to wit, the adjustment of a switch. That duty had been performed when he sought to rejoin his train. If in doing this he saw fit to walk upon the track, he did so at his own risk. His obligation to join his train involved neither a duty nor a necessity to walk where he was struck. * * * It was a mere matter of passing from one given point of the road to another. Whilst so engaged he had no higher protection than a stranger walking over the same ground."

In Shea *v.* Pennsylvania R. Co. (13 At. Rep. 193), an employe was killed by the neglect of a fellow employe and watchman of some men who were working on the track to warn them of an approaching train, of which he had notice. The company was not liable.

35. In Northern Central R. Co. *v.* Husson (101 Pa. 1, 6), an employe of the company while engaged in his ordinary occupation of coupling cars, was caught by the head between the ends of bridge irons projecting from the cars and crushed to death. It was customary for railroad companies to load bridge irons in this manner, and the employe knew this, and also that the cars were thus loaded on the occasion of his death. The regulations of the company required servants in coupling to stoop below the body of the car. The employe had been for some time in the service of the company and knew of the regulations. Besides, he had been especially warned on the day in question

to observe it. Had he done so, like other servants engaged in coupling other cars on the same train, he would have done so with safety. A verdict having been rendered for the plaintiff, Mr. Justice Green, in reviewing the case, remarked that the accident "was the result of the manner in which the act of coupling was performed. The same cars, with the same loading upon them, were, immediately after the accident, successfully coupled by another person in perfect safety. The only difference in the two acts of coupling was in the manner in which they were respectively done. Husson's head was raised high enough to be caught by material loaded on top of the cars, and Gaul, who made the second coupling, kept his head below the material and was not caught. * * * The act of coupling was necessarily to be performde below the bottom of the cars, as the apparatus by which it was to be done was there located. * * * Common prudence would seem to indicate the necessity of such a precaution, and the mere fact and character of the accident would appear to demonstrate that it was due to a want of ordinary care by the deceased."

36. Nor is the general rule, that an employer is not liable to his employe for an injury occasioned by the negligence of a co-employe affected by continuing an employe in service though exhausted, if an accident occurring afterward cannot be ascribed to his exhausted condition. An attempt was made to establish such a limitation in Johnston *v.* Pittsburgh & Western R. Co. (114 Pa. 443). Mr. Justice Paxson, in reviewing the case, remarked: "The plaintiff was a brakeman in the employ of the defendant company, and whilst in such employ, without any negligence on his part, was injured by the colliding of his train with another train on the same road. The collision was admittedly the result of the neglect of the conductor and engineer of the train on which plaintiff was engaged, to stop at Wildwood Station for orders. * * * If this were all it is obvious that the plaintiff would be prevented from recovering for the injuries which he received by reason of the familiar rule which relieves the employer from liability when an injury is the result of the negligence of a co-employe of the person injured. But the plaintiff alleges that the conductor was sick and unfit to have taken the train out, and that the engineer had been on continuous duty so many hours as also to be unfit for duty. There was evidence that the conductor was sick; that he had been on duty for an unusual length of time, and that he had asked permission to be relieved from this trip. But there was no evidence that the starting of his train without orders was the result of his sickness. * * * The collision did not occur because either the conductor or engineer was in such a condition that he could not wait for orders to take the train out, or that he did not know it was his duty to do so."*

* For other cases in which the employer was held not liable to an employe for an injury sustained by the negligence of another employe, see Keyes *v.* Pennsylvania R. Co., 3 East. Rep. 830, s. c. 3 At. Rep. 15; Graft *v.* Baltimore & Ohio R. Co., 8 At. Rep. 206.

37. When an employe is thus injured by a fellow employe the employer, so the courts have declared, is entitled to a definite instruction to the jury that he cannot recover. Says Mr. Justice Green, in Rohan's Case (118 Pa. 223, 228), "If there was no evidence to prove negligence it was not for the jury, but for the court to decide the case, by a specific instruction to return a verdict for the defendant. No principle of the law is more familiar or more deeply rooted in our system of jurisprudence than this."* This rule, however, is not always observed. Thus, in Hoffman *v.* Clough (124 Pa. 505), an employe in a factory had been injured by falling into an opening in the floor of which he had no knowledge. As the cover, so the employer maintained, had been removed without his direction, the negligent act was that of a co-employe, for which he was not responsible. Mr. Justice Williams remarked: "The court was asked to declare the law upon these facts and to say that if they were found by the jury there was no negligence to be imputed to the defendant, and no responsibility for the injury. The question of the liability of an employer for an injury to his employe which resulted, not from his own negligence but from that of another employe, was fairly presented and the defendant had a right to a clear and definite instruction." In Phila. & Reading R. Co. *v.* Schertle (97 Pa. 450), he sought to recover for an injury occasioned by the company's negligence. The company requested the court to charge "that under all the evidence in this case the plaintiffs cannot recover." Said Mr. Justice Paxson, in criticising this instruction, "The learned judge declined to so instruct the jury, upon the ground that it would withdraw the case from their consideration. This was the object of the point. * * * If there was no evidence, or at most a scintilla, it was the duty of the court to withdraw the case from the jury and give a binding instruction to find for the defendant." †

38. Negligence, however, is always a queston for the jury when there is a reasonable doubt of the facts or of an inference from them.

* "The law is well settled if facts have not been shown from which negligence may reasonably be inferred, the case should not be submitted to a jury to infer arbitrarily and without evidence that there was negligence.—Fouhy *v.* Pennsylvania R. Co., 4 East. Rep. 630, 632. When the evidence is sufficient to show negligence there is no question of negligence to submit to the jury, and, therefore, it ought not to be submitted to them. Pennsylvania R. Co. *v.* Fries, 87 Pa. 234.

† For other cases in which the jury were directed, or should have been, what verdict to find, are Reading Iron Works *v.* Devine, 109 Pa, 246; Towanda Coal Co. *v.* Heeman, 86 Pa. 418; Wannamaker *v.* Burke, 111 Pa, 423; Reading & Columbia R. Co. *v.* Ritchie, 102 Pa, 425; Howard Express Co. *v.* Wile, 64 Pa. 201; Hoag *v.* Lake Shore & Mich. So. R. Co., 85 Pa. 293; Pennsylvania R. Co. *v.* Fries, 87 Pa. 234; Mansfield Coal & Coke Co. *v.* McEnery, 91 Pa. 185; Fox *v.* Borkey, 126 Pa. 164; Crawford *v.* Stewart, 19 W. N. Cas. 48; Graft *v.* Baltimore & Ohio R. Co., 8 At. Rep. 206; Central Railroad *v.* Feller, 4 W. N. Cas. 160; Goshorn *v.* Smith, 92 Pa. 435; Carroll *v.* Pennsylvania Coal Co., 15 At. Rep. 688; Barnes *v.* Sowden, 12 At. Rep. 804 and note. When a request for a binding instruction was properly denied: Bentley *v.* Crammer, 137 Pa. 244; Pottstown Iron Co. *v.* Fanning, 6 At. Rep. 578. See Del., Lack. & W. R. Co. *v.* Cadow, 120 Pa. 559, 572.

When the measure of duty is ordinary and reasonable care and the degree of it varies with circumstances the question of negligence is necessarily for the jury.*

In Fisher *v.* Monongahela City R. Co. (131 Pa. 292), Mr. Justice

*Pennsylvania R. Co. *v.* White, 88 Pa. 327; Fritsch *v.* City of Allegheny, 91 Pa. 226; Baker *v.* Fehr, 97 Pa. 70; Crissey *v.* Hestonville, etc., Pass. R. Co., 75 Pa. 83, 86; McCully *v.* Clarke, 40 Pa. 399, 406; Pennsylvania Canal Co. *v.* Bentley, 66 Pa. 30; West Chester & Phila. R. Co. *v.* McElwee, 67 Pa. 311; Schum *v.* Pennsylvania R. Co., 107 Pa. 8, 11; North Pennsylvania R. Co. *v.* Kirk, 90 Pa. 15, 19; Shaffer *v.* Haish, 110 Pa. 575; McKee *v.* Bidwell, 74 Pa. 218, 223; Mullan *v.* Philadelphia & Southern Mail S. Co., 78 Pa. 25, 32; Phila., Wil. & B. R. Co. *v.* Stinger, 78 Pa. 219, 226; American Steamship Co. *v.* Landreth, 108 Pa, 264; Thirteenth & Fifteenth St. Pass. R. Co. *v.* Boudrou, 92 Pa. 475; Cole *v.* Wehn, 3 W. N. Cas. 408.

In Schum *v.* Pennsylvania R. Co. (107 Pa. 8, 11), Clark, J., said: "What constitutes negligence in a given exigency, is generally a question for the jury and not for the court. Negligence is want of ordinary care under the circumstances; the standard is, therefore, necessarily variable; no fixed rule of duty can be formed which can apply to all cases. A course of conduct justly regarded as resulting from the exercise of ordinary care under some circumstances, would exhibit the grossest degree of negligence under other circumstances; the opportunity for deliberation and action, the degree of danger and many other considerations of a like nature affect the standard of care which may be reasonably required in a particular case. When the standard shifts, not according to any certain rule, but with the facts and circumstances developed at the trial, it cannot be determined by the court, but must be submitted to the jury." In another case Sterrett, J., remarked that "what constitutes negligence in a given exigency is generally a question for the jury and not for the court. Where material facts are disupted or inferences of fact are to be drawn from the testimony, the case should be submitted to the jury. It is only when the precise measure of duty is determinate—the same under all circumstances—that the court can undertake to determine what constitutes negligence. When the duty is defined, a failure to form it is, of course, negligence, and may be so declared, as matter of law, by the court." Pittsburgh, etc., Pass. R. Co. *v.* Kane, 11 East. Rep. 388, 389, citing Pennsylvania R, Co. *v.* Werner, 89 Pa. 59; Schum *v.* Pennsylvania R. Co., 107 Pa. 8. See also City of Harrisburg *v.* Saylor, 87 Pa. 216.

"Negligence," said the court on a recent occasion, "is the absence of care according to the circumstances; and what constitutes negligence when the standard shifts not according to any certain rule, depends upon the facts and circumstances developed at the trial, and cannot be determined by the court, but must be submitted to the jury." Del., Lack. & Western R. Co. *v.* Jones, 24 W. N. Cas. 562, 563, citing Frankford & Bristol Turnpike Co. *v.* Phila. & Trenton R. Co., 54 Pa. 345; Pennsylvania R. Co. *v.* Coon, 111 Pa. 430; Taylor *v.* Del. & Hudson Canal Co., 113 Pa. 162; Lee *v.* Woolsey, 109 Pa. 124; Longenecker *v.* Pennsylvania R. Co., 105 Pa. 328; Neslie *v.* Second & Third Sts. Pass. R. Co., 113 Pa. 300.

"But," as was said in McCully *v.* Clarke (40 Pa. 399, 406) "there are some cases in which a court can determine that omissions constitute negligence. They are those in which the precise measure of duty is determinate, the same under all circumstances. When the duty is defined, a failure to perform it is, of course, negligence, and may be so declared by the court." See also Reeves *v.* Del., Lack. & Western R. Co., 30 Pa. 454; Pennsylvania R. Co. *v.* Zebe, 33 Pa. 318; Pennsylvania R. Co. *v.* Ogier, 35 Pa. 60, 71; Carroll *v.* Pennsylvania R. Co., 12 W. N. Cas. 348; Tissue *v.* Baltimore & Ohio R. Co., 112 Pa. 91. "Negligence is ordinarily a question for the jury, but where the facts are uncontroverted, their legal effect is for the court. Catawissa R. Co. *v.* Armstrong, 52 Pa. 282; Pittsburgh & Connellsville R. Co. *v.* McClurg, 56 Pa. 294; McKee *v.* Bidwell, 74 Pa. 218; City of Erie *v.* Magill, 101 Pa. 616. All the facts affecting the question of contributory negligence were furnished by the plaintiff's testimony. What was their legal effect? This was the question presented by the tenth point, and, as we think, properly answered. If so, there was no question left which, if submitted to the jury, could relieve the plaintiff from the consequences of his own carelessness, and the binding instruction asked for in the eleventh point should have been given" William, J., Del., Lack. & Western R. Co. *v.* Cadow, 120 Pa. 559, 572. In Crissey *v.* Hestonville, etc., Pass. R. Co., 75 Pa. 83, 86, Mercur, J., said: "There is no absolute rule as to what constitutes negligence. It is dependent upon the particular circumstances of the case. Where the measure of duty is not unvarying; where a higher degree of care is demanded under some circumstances than under others; where both the duty and the extent of its performance are to be ascertained as facts, a jury alone can determine what is negligence, and whether it has been proven. McCully *v.* Clarke, 40 Pa. 399, 406; Pennsylvania Canal Co. *v.* Bentley, 66 Pa. 30. Where the measure of duty is ordinary and reasonable care it is always a question for the jury. West Chester & Phila. R. Co. *v.* McElwee, 67 Pa. 311."

Sterrett inquired: "What constitutes negligence in a given case, is generally a question for the jury. When the facts are admitted, or so clearly and conclusively proved as to admit of no reasonable doubt, it is the duty of the court to declare the law applicable to them; but when material facts are disputed, or even in doubt, or inferences of fact are to be drawn from the testimony, it is the exclusive province of the jury to determine what the facts are, and apply them to the law as declared by the court. The line of demarcation, in that respect, between the duty of the court and that of the jury, should be carefully guarded. While, on the one hand, the court should never permit the jury to disregard or evade its instructions as to matters of law, it should be equally careful not to invade the province of the jury, and take upon itself the determination of facts about which there may be any question."*

39. Moreover, the admission of improper evidence is not cured by a judicial direction to the jury to blot it from their minds. Says Mr. Justice Green: "It has long been held, and in many cases, that where evidence has been improperly received which tends to prejudice the minds of the jurors, and the court in the charge directs the jury to disregard the evidence and withdraws it from their consideration, this instruction comes too late and does not cure the error of admitting it."† In Decker's case Mr. Justice Mercur said, referring to Del. & Hudson Canal Co. *v.* Barnes: "The manifest reasoning of the court was to hold that whenever the testimony received was of such a character as to inevitably tend to prejudice the minds of the jurors, the error was not cured by the court telling them after the argument had closed not to consider the testimony." And in Pennsylvania R. Co. *v.* Butler, Mr. Justice Sharswood said: "It is in entire accordance with the opinion if improper evidence is given tending to inflame the damages, and it is not struck out at or before the close of the testimony, so that counsel shall not be allowed to refer to or dwell upon it in their address to the jury, it is altogether too late to cure the mistake by directing the jury to disregard it in the charge."

40. Finally if an injury is not occasioned by negligence for which an employer is liable, the plaintiff may be nonsuited.‡ For, it is

*Miller *v.* Bealer, 100 Pa. 583; Hill *v.* Nation Trust Co., 108 Pa. 1; McGrann *v.* Pittsburgh & Lake Erie R. Co., 111 Pa. 171; Bloomsburg Steam Co. *v.* Gardner, 126 Pa. 80.

†Erie & Wyoming Valley R. Co. *v.* Smith, 125 Pa. 259, 264; Del. & Hudson Canal Co. *v.* Barnes, 31 Pa. 193; Pennsylvania R. Co. *v.* Butler, 57 Pa. 335; Huntingdon, etc., R. Co. *v.* Decker, 82 Pa. 119.

‡Burrell *v.* Gowen, 134 Pa. 527: Johnston *v.* Pittsburgh & Western R. Co., 114 Pa. 443; Marland *v.* Pittsburg & L. E. R. Co., 123 Pa. 487; Zurn *v.* Tetlow, 134 Pa. 213; Rickert *v.* Stephens, 133 Pa. 538; Faber *v.* Carlisle Mfg. Co., 126 Pa. 387; Ballard *v.* New York, etc., R. Co., 126 Pa. 141; Butler *v.* Gettysburg, etc., R. Co., 126 Pa. 160; Duffy *v.* Oliver Brothers, 131 Pa. 203; Keyes *v.* Pennsylvania R. Co., 3 At. Rep. 15; McClafferty *v.* Fisher, 3 East. Rep. 402; Dealey *v.* Phila. & Reading R. Co., 4 At. Rep. 170; Somer *v.* Harrison, 8 At. Rep. 799; Barton *v.* Jones, 8 At. Rep. 850; Baldwin *v.*

reasoned, if there is not sufficient evidence to support a verdict against the employer, should one be rendered, the jury have no province or duty to perform.

41. In narrowing the province of the jury in the ways described, the reason is their supposed unfitness to pursue intelligently and fairly a larger field of inquiry. The courts have learned from many trials that juries are moved by their sympathies, by the small means of complainants, compared with the means of corporations and other parties against whom a recovery is sought. Other motives, prejudice and the like, have sometimes moved them to render verdicts which if not in accordance with the facts, they believed were fully justified on general principles. If, therefore, the province of juries in this class of cases has been so greatly narrowed that hardly any judgment is left for them to render, they are chiefly responsible for having their ancient authority abridged. In another way their unreasoned judgments have yielded undesirable results. If the law defining the duties of employed and employer has been growing one-sided, this may be clearly traced to the anxiety of the judges to correct the evils wrought by juries. This will appear more clearly in another part of the subject.

42. This, therefore, is the most general principle that has been established by the courts in defining the liability of employers to their employes, that when an employe is injured through the carelessness of another in the same general service, the employer is not responsible for the injury.*

43. Employers, however, are not wholly free to select employes, machinery and materials. They have well-defined duties in these regards and are responsible to their employes for the consequences of their non-performance. We shall, therefore, proceed to show what these duties are. The employer (1) must use reasonable care in selecting his employes; (2) in selecting the materials that are to be used in his business; (3) in selecting tools, machinery or other apparatus; (4) in selecting a place for his employes; and (5) when they are young or

Pennsylvania R. Co., 2 Lan. Bar No. 15; Orrison *v.* Pennsylvania Co., 24 Pittsburgh L. Jour. 37; Kelly *v.* Baltimore & Ohio R. Co., 11 At. Rep. 659; Brown *v.* Wood, 16 At. Rep. 42; O'Keefe *v.* Thorn, 16 At. Rep. 737; Fair *v.* Pennsylvania R. Co., 14 At. Rep. 236; Stoll *v.* Hoopes, 14 At. Rep. 658; Shea *v.* Pennsylvania R. Co., 13 At. Rep. 193; Wert *v.* Keim, 13 At. Rep. 548; Maguire *v.* Magee, 13 At. Rep. 551; Rick *v.* Cramp, 12 At. Rep. 495; Beittenmiller *v.* Bergner & Engel Brewing Co., 12 At. Rep. 599, S. C. 22 W. N. Cas. 33; Smith *v.* Drake, 17 At. Rep. 449; Hawk *v.* Pennsylvania R. Co., 11 At. Rep. 459.

*Frazier *v.* Pennsylvania R. Co., 38 Pa. 104; Caldwell *v.* Brown, 53 Pa. 453; O'Donnell *v.* Allegheny V. R. Co., 50 Pa. 490, 2d trial 59 Pa. 239; Mullan *v.* Phila. & Southern Mail S. Co., 78 Pa. 25, 32; Lehigh Valley Coal Co. *v.* Jones, 86 Pa. 432, 439; Trainor *v.* Phila. & Reading R. Co., 137 Pa. 148; Weger *v.* Pennsylvania R. Co., 55 Pa. 460, Hoffman *v.* Clough, 124 Pa. 505, 511; Ardesco Oil Co. *v.* Gilson, 63 Pa. 146; Hays *v.* Millar, 77 Pa. 238; Allegheny Heating Co. *v.* Rohan, 118 Pa. 223; Phila. Iron & Steel Co. *v.* Davis, 111 Pa. 597, 602; Lewis *v.* Seifert, 116 Pa. 628, 643, 646; Duffy *v.* Oliver Brothers, 131 Pa. 203; Baldwin *v.* Pennsylvania R. Co., 2 Lan. Bar No. 15; Orrison *v.* Pennsylvania Co., 24 Pittsburgh L. Jour. 37; Peck *v.* Del. & Hudson Canal Co., 3 Luz. Leg. Obs. 21; Maguire *v.* Magee, 13 At. Rep. 551.

inexperienced in instructing them concerning the work they are to perform; while (6) a railroad company must also promulgate such rules for moving its trains as will afford reasonable safety to the operatives who are engaged in moving them.*

44. That an employer should use reasonable care in these matters no one will question. This rule of duty has been prescribed and maintained from the beginning. But what is meant by ordinary or reasonable care? This will vary with the kind of business, or materials, or machinery, used. The remarks of Mr. Justice Sharswood are pertinent. "What employers owe to their servants and workmen is the exercise of reasonable care and proper diligence in providing them with safe machinery and suitable tools, and in employing with them fit and competent superintendents and fellow workmen. Not that they warrant the result, nor that extraordinary vigilance is exacted of them. It is nevertheless true, as stated by the learned judge below, in his charge, that what is due care and ordinary diligence will much depend on the kind of business which is carried on, and the sort of material which is handled. The proprietor of a powder mill must exert more precaution than the master of a blacksmith shop. So, in such an establishment as that * * of refining oil from crude petroleum, a material highly inflammable and explosive, we are bound to examine the question of negligence with regard to this circumstance" (Ardesco Oil Co. *v.* Gilson, 63 Pa. 146, 150).

45. Of course, if an employer must select suitable tools, machinery and employes in the beginning, he must also replace or repair such tools and machinery when they become defective, and also select other employes for those whose incompetency has become apparent (Weger *v.* Pennsylvania R. Co., 55 Pa. 460). Says Mr. Justice Mercur: "It is well settled in England, and in Pennsylvania, and pretty generally in this country, that a servant who is injured by the negligence or misconduct of a fellow servant, cannot maintain an action against the master for such injury. If, however, there be fault in the selection of the other servant, or in retaining him in his place, after he has proved incompetent, or in employing unsafe machinery, the master may be liable." (Lehigh Valley Coal Co. *v.* Jones, 86 Pa. 432, 439). Likewise Mr. Justice Clark has remarked in the case of the Phila. & Reading R. Co. *v.* Hughes, (119 Pa. 301, 312) that it is the duty of the company also to use ordinary and reasonable care in the employment of his fellow servants or employes, and to dismiss any of these whom

*Lehigh, etc., Coal Co. *v.* Hayes, 128 Pa. 394; Lehigh Valley Coal Co. *v.* Jones, 86 Pa. 432, 439, 441; Allison Mfg. Co. *v.* McCormick, 118 Pa. 519, 528; Payne *v.* Reese, 100 Pa. 301; Pittsburgh, etc., R. Co. *v.* Sentmeyer, 92 Pa. 276; Baker *v.* Allegheny Valley R. Co., 95 Pa. 211; Phila., Wil. & B. R. Co. *v.* Keenan, 103 Pa. 124; Shaffer *v.* Haish, 110 Pa. 575; Phila. & Reading R. Co. *v.* Hughes, 119 Pa. 301; Rummell *v.* Dilworth, 111 Pa. 343; Green & Coates St. Pass. R. Co. *v.* Bresmer, 97 Pa. 103; Mansfield Coal & Coke Co. *v.* McEnery, 91 Pa. 185; Penna. & N. Y. Canal R. Co. *v.* Mason, 109 Pa. 296; Weger *v.* Pennsylvania R. Co., 55 Pa. 460; Campbell *v.* Pennsylvania R. Co., 3 East. Rep. 826; Barkdoll *v.* Pennsylvania R. Co., 13 At. Rep. 82.

they may know to be careless or unfit for the places assigned to them. "If there is any default," says Mr. Justice McCollum, "in the selection of the other servants, or in continuing them in their places after they have proved incompetent, the master is answerable for an injury to another servant which is the consequence of such default."*

This rule of duty, which would be very salutory if faithfully performed, has been greatly narrowed by the courts, as we shall hereafter show.

46. The way is now prepared for reviewing the decisions in which the duty of the employers to select suitable emloyes for the service they are expected to perform have been defined and applied. As we have seen, an employer is not responsible to an employe for an injury occasioned by the negligence of a fellow employe, unless he has not fulfilled his duty in selecting suitable employes, tools, machinery, materials and the like. When, therefore, an accident happens to an employe he must show that his employer has been remiss in one of these regards in order to recover. The cases are numerous in which the employe has tried to prove that his employer was undutiful in selecting or retaining improper servants. †

47. In Rickert *v.* Stephens (133 Pa. 538) the plaintiff's husband was killed, so she claimed, by the negligence of the defendant in employing a boy under fourteen years of age to perform the service of signaling to the person killed, an engineer. It was shown that the service required no skill or judgment, and had always been performed by boys. The plaintiff was nonsuited, and in reviewing the case the supreme court said: "The evidence fails to disclose any evidence of negligence on the part of the defendants. There was nothing to show that the boy was not competent to give the signals to the engineer, nor that the defendants were guilty of negligence in employing him. It was true he was under fourteen years of age, yet his employment called for no skill or judgment. His duties were automatic; he was merely to repeat signals to the engineer which he received from the workmen

*Trainor *v.* Phila. & Reading R. Co., 137 Pa. 148, 160; Lewis *v.* Seifert, 116 Pa. 628; O'Donnell *v.* Allegheny R. Co., 59 Pa. 239. The employer is "equally chargeable whether the failure is found in the original tool or machine, or in a subsequent want of repair by which it becomes dangerous. There can, indeed, be no essential difference in these particulars." Gordon, J., Pennsylvania & N. Y. Canal R. Co. *v.* Mason, 109 Pa. 296, 301. See § 81.

†Caldwell *v.* Brown, 53 Pa. 453, 456; O'Donnell *v.* Allegheny Valley R. Co., 59 Pa. 239, 248; Weger *v.* Pennsylvania R. Co., 55 Pa. 460; Lewis *v.* Seifert, 116 Pa. 628; Phila., Wil. & Balt. R. Co. *v.* Keenan, 103 Pa. 124; Green & Coates St. Pass. R. Co. *v.* Bresmer, 97 Pa. 103; Patterson *v.* Pittsburgh & Connellsville R. Co., 76 Pa. 389; Penn & N. Y. Canal & R. Co. *v.* Mason, 109 Pa. 296; Schall *v.* Cole, 107 Pa. 1; Allison Mfg. Co. *v.* McCormick, 118 Pa. 519; Phila. & Reading R. Co. *v.* Hughes, 119 Pa. 301; Rummell *v.* Dilworth, 111 Pa. 343, second trial 131 Pa. 509; Keyes *v.* Pennsylvania R. Co., 3 At. Rep. 15. In this case an engineer of a railroad was crossing the tracks in the company's yard on his way to work. He was seen standing on the track in front of an engine which was backing down on it, and a moment afterwards was struck and killed. The engineer who was operating the engine had only one eye, while the other was defective owing to sympathetic causes. The company was not regarded negligent in employing such an engineer.

in the quarry. It was in evidence that this work had always been performed by boys, and that this particular boy had frequently acted in this capacity before, of which the deceased had knowledge. The risk the latter assumed was one of those which are incident to his employment, and of which he had full knowledge."

48. In the case of Trainor *v.* Phila. & Reading R. Co. (137 Pa. 148), the plaintiff was a coal-handler and was injured while employed near an apparatus for storing coal, which was unfamiliar to him and dangerous. The accident occurred when the foreman of the derrick, Toner, was away and it was in charge of another, McFadden, who, it was asserted, was incompetent for the position. The apparatus had not been long in use, and consisted of a heavy pole fifty or sixty feet in length, set upright in a wooden cup on the ground and held in its place by guys. At the top of the pole was fastened an endless chain with scoops or pockets, by which the coal was drawn to the top of the pole and then dropped down, and the process was continued until the pile of coal was as high as it could be made, then the guys were taken down and attached to a pole in another place. Trainor was injured while removing coal from one of these piles. Mr. Justice McCollum said: "As the support was weakened by the removal of the coal, it was liable at any moment to fall upon and crush the men working at its base. The company knew this but did not advise its coal-handlers of the danger to which they were exposed. It was a danger which was not patent to one in ignorance of the facts and whose experience and observation had taught him that such poles were either held in place by guys, or securely set in the ground. * * *. It is obvious from the description of the plan, that its successful execution required the vigilant superintendence of a competent person, and even thus, speaking for myself, it was dangerous. A slight inconvenience or expense may have been saved by it, but these can have no weight in the matter affecting the safety of the workmen. * * * The company knew how the pole was supported, and that its employes were engaged in removing the coal from it, and must, therefore, have known that their safety required the presence of a competent person to supervise the work of taking it down. It knew McFadden's habits, capacity and duties, and the duties of Toner. Its promise to send a man to take the place of the latter was evidence of its own understanding of its duties in the premises." In Barton *v.* Jones, (8 At. Rep. 850), the injured employe contended that his injury was caused by the inefficiency of an engineer, who was serving in place of the regular one, without the employe's knowledge. He failed to sustain his case.

49. In Mansfield Coal & Coke Co. *v.* McEnery (91 Pa. 185), a person lost his life by falling from the company's bridge. His widow sued, claiming that the company had been negligent in constructing it. The jury having rendered a verdict for the plaintiff, Mr. Justice

Paxson remarked in reviewing the case: "The deceased having lost his life by the giving way of the defendant's bridge, over which he was passing at the time with a mule team, it was a necessary part of the plaintiff's case to show that the bridge had not been properly constructed. The defence was that the defendants had exercised ordinary skill and care in the selection of employes to construct it. This defence is ample if made out. * * * The defendants showed, and it was not disputed, that they employed [a person] to construct this bridge [who] was a carpenter and bridge-builder of experience. It is not enough for the plaintiffs to show that his work was unskilfully done or that he was incompetent. It must appear that the defendants were guilty of negligence in selecting him; that they either knew he was incompetent or with proper diligence might and ought to have known it. The law presumes they exercised ordinary care and skill in making the selection. The defendants are as much entitled to this presumption as the plaintiffs are to the presumption that the deceased exercised ordinary care in crossing the bridge. It will not do to have all the presumptions on one side. It follows that the burden of proof of showing that the defendants did not exercise ordinary care and skill in the employment of [the carpenter], rests upon those who assert it. This principle is sustained by respectable authority. In Wonder *v.* Baltimore & Ohio R. Co. (32 Md. 411, 418), the supreme court of that state said: "If, therefore, the defect in the brake that caused the injury existed by reason of the neglect or want of care on the part of such employes of the defendant, the latter cannot be held liable, unless there has been negligence in the selection of those servants, and the onus of proof of such negligence is on the plaintiff." In the Pittsburgh, Ft. Wayne & Chicago R. Co. *v.* Ruby (38 Ind. 294, 311), it was held that the plantiff must show that 'the defendant had not exercised ordinary care and prudence in the employment of such persons.' The Supreme Court of Massachusetts and the Court of Errors and Appeals of New York have laid down a similar rule: Albro *v.* Agawam Canal Co. (6 Cush. 75, 77); Gilman *v.* Eastern R. Co. (10 Allen 233); Wright *v.* New York Central R. Co. (25 N. Y. 562, 566). The same doctrine is recognized in Feltham *v.* England (L. R. 2 Q. B. 33), and in our own case of Frazier *v.* Pennsylvania R. Co. (38 Pa. 104). There was no evidence that the defendants did not exercise ordinary care and prudence in the selection of their bridge-builder."

50. In many of the cases the injured employe has tried to show that his injury happened through the incompetency of his foreman. This subject has been recently considered by Mr. Justice Williams, in Ross *v.* Walker (139 Pa. 42, 49), who has remarked that, "when the character of the business requires it the master is as much bound to provide his workmen with a reasonably competent foreman as to provide them with tools, but in either case his liability ceases when he has

made a suitable selection. He is neither bound to provide the best tools and machinery, nor the highest grade of skill in his foreman, but he is bound to provide that which is reasonably safe and sufficient in both cases, and having so done, he has discharged his duty. What remains to be done is that each workman, whatever his rank, or skill, or experience, shall, with reasonable diligence and intelligence, discharge his duty towards his employer and his fellows. It is thus apparent that, whenever it is sought to hold the master liable for the act or neglect of his foreman, the question to be first considered is whether the negligence complained of relates to anything which it was the duty of the principal to do. If it does, then the principal is liable; for he must see at his peril that his own obligations to his workmen are properly discharged. If it does not, he is not liable; for all his workmen are liable to each other for the consequences of their negligence, respectively, and he does not insure them against each other by the mere fact of employing them."*

51. In Keystone Bridge Co. *v.* Newberry (96 Pa. 246), the case turned on the question whether the gang-boss or foreman was competent. It was answered affirmatively. When he is, and no question of his competency exists, the question of his negligence, the court declared, ought not to be left to the jury. With respect to a mine-boss when an operator has used reasonable care in selecting him, he is not responsible for the consequences of the boss' negligence. This was determined in Biddle's case (Reese *v.* Biddle, 112 Pa. 72). He professed to be a practical miner, was employed by the defendant company and continued in their employ for more than a year when he was injured by the fall of coal on him from the roof of the room in which he was working. The mine at the mouth was well supplied with props, and each miner was required to select the props he needed, and when selected they were taken into the mine and delivered in the miner's room by the driver of the car which conveyed the coal fom the mine. Mr. Justice Paxson said: "It was plain error to instruct the jury that the defendants below were responsible for the negligence of their mine boss. There was no evidence that he was not competent to perform his duties, and hence no negligence can be imputed to defendants for employing him. It has been repeatedly held that a mining boss is such a fellow servant as in case of an injury to other employes, through his negligence the master is not responsible. It is sufficient to refer to Lehigh Valley Coal Co. *v.* Jones (86 Pa. 432); Delaware & Hudson Canal Co. *v.* Carroll (89 Pa. 374); Keystone Bridge Co. *v.* Newberry (96 Pa. 246)."

52. In National Tube Works Co. *v.* Bedell (96 Pa. 175, 178), the plaintiff claimed that the accident happened to him through the negligence of

*Citing Patterson *v.* Pittsburgh & Connellsville R. Co., 76 Pa. 389; Mullan *v.* Phila. & Southern Mail S. Co., 78 Pa. 25; Penn. & N. Y. Canal & R. Co. *v.* Mason, 109 Pa. 296; Lewis *v.* Seifert, 116 Pa. 628; Bier *v.* Standard Mfg. Co., 130 Pa. 446.

Eardly, a servant of the company, who had charge of the work. Mr. Justice Mercur, who delivered the opinion of the court, after remarking that the action rested on the alleged negligence of the company and that the burden of the proof was on the injured employe to establish the negligence, declared that there was no evidence that the company had any notice that Eardly was not a careful and competent person to perform the work to which he was assigned, nor that this appeared from any fact. It therefore followed that the company was not guilty of negligence in putting him in charge of the work.

53. When, therefore, an employe is unfit for his position and his employer knows it, he is responsible for the consequences. Thus, if a railroad company employs a conductor who is unfit for the business, and the company knows of his unfitness it is responsible for the consequences of the conductor's negligence, even to an employe in the same general service (Huntingdon, etc., R. Co. *v.* Decker, 82 Pa. 119).

54. Furthermore, the knowledge of a superintendent possessing general authority, is regarded as the knowledge of his company.*

55. That employers must select and keep suitable servants, and on the discovery of their incompetency to make other selections, is indeed a reasonable and salutory requirement, and which should be enforced on all occasions. Nevertheless, if an employer engages an unskilful workman and his fellow workmen know this, and continue in the common employment with him, they cannot recover for injuries resulting from his unskilfulness. Mr. Chief Justice Lowrie thus stated the rule in the case of a railroad employe: "If the plaintiff knew that his conductor was habitually careless, and chose to continue in service with him, and did not inform the company of his known acts of carelessness, and refuse to serve with him, he can have no claim against the company for injuries suffered from further carelessness, even if the company did also know."† If the company had no knowledge of the conductor's habits, there was a good reason for regarding it not responsible for his act; but the court declared that it was relieved from responsibility if it had such knowledge and the employe also knew and continued to work with him. This conclusion is reached by applying the same reasoning as in the cases where employers are released from liability for injuries resulting from the use of unsafe machinery, the real condition of which is known by the employe when accepting the service. Necessity usually compels the employe to retain his situation, even though knowing of the incompetency of his associates, and the danger of working with them. It is very easy to declare that the correct thing for a workman to do, if he fears danger, is to step down and

*Huntingdon, etc., R. Co. *v.* Decker, 82 Pa. 119; Frazier *v.* Pennsylvania R. Co., 38 Pa. 104: Caldwell *v.* Brown, 53 Pa. 453; O'Donnell *v.* Allegheny Valley R. Co., 59 Pa. 239; Ardesco Oil Co. *v.* Gilson, 63 Pa. 146; Patterson *v.* Pittsburgh & Connellsville R. Co., 76 Pa. 389.

†Frazier *v.* Pennsylvania R. Co., 38 Pa. 104, 111.

out; but if he does, into what other place can he step? Prudence requires generally that he ought not to leave his place until he is assured of another; and the far more reasonable rule of duty would seem to be, not to require a faithful and careful servant to leave his place if his life and health are endangered by the conduct of careless and less meritorious fellow servants, but to require his employer when, discovering their unfitness, to discharge them and fill their places with better men. The law, as now declared by the court, imposes the hardship on the best and most competent servants, with no check on the inclination or interest of employers to employ improper servants, unless it be the loss of machinery and materials and inferior products resulting from their unskilfulness or non-observance of proper care. Ought not the law to be completely reversed, and require employers to engage reasonably competent men, to replace those who are not, whenever their incompetency is discovered, and to require employers to do these things whether employes are willing to work with incompetent associates or not. To absolve employers from this duty, whenever their employes know of the incompetency of those around them, is to perpetuate the employment of unfit men, and to discourage those who desire to render faithful and efficient service.

56 The duty of employers to select suitable tools, machinery and apparatus for the use of their employes, will next be considered. We will begin with a statement of the law by Mr. Justice Williams (Rummell *v.* Dilworth (131 Pa. 509, 519). "The general rule that a workman assumes the risks incident to his employment when he enters upon it is well settled, but its application is subject to certain qualifications. He certainly has the right to expect his employer to provide machinery, tools and apparatus that are reasonably safe for his use, and he assumes no risks growing out of their defective character, unless he has been fully advised that they are defective and dangerous. He has the right to suppose that his employer has provided such guards and means of protection from injury in the use of the machinery, tools and appliances as are usual and reasonably necessary for his safety; and he cannot be held to assume the risks attendant on their absence, unless such absence is apparent, or his attention has been called to it. If the business is one with which he is not familiar, he has a right to expect that its dangers will be pointed out to him, and that he will be instructed in those things necessary for him to know in order to his own safety. He cannot be held to assume the risk of danger of the existence of which he has no knowledge" (Mullan *v.* Phila. & Southern Mail S. Co. (78 Pa. 25, 31).

57. In the former trial of the same case Mr. Justice Clark stated the rule of duty in the following language (111 Pa. 343, 349): "It is a well stated rule of the law that the master must adopt, provide and maintain reasonably suitable instruments and means with which to carry

on his business, so that his servant may perform his duties with relative safety, and without exposure to dangers which are not reasonably incident to his employment." Another remark of the justice may be added, that the scope of the duties of an employe is to be defined by what he is employed to perform, and actually did perform with the knowledge and approval of his employer, rather than by the verbal designation of his position.

58. The remarks of the court by Mr. Justice Gordon, in Patterson *v.* Pittsburgh & Connellsville R. Co. (76 Pa. 389, 393), are worth giving: "It is true the master is not responsible for accidents occurring to his servant from the ordinary risks and dangers which are incident to the business in which he is engaged; for in such case the contract is presumed to be made with reference to such risks. But, on the other hand, where the master voluntarily subjects his servant to dangers, such as, in good faith he ought to provide against, he is liable for any accident arising therefrom. In the case of Clark *v.* Holmes (7 Hurl. & Norm. 937), it was ruled, that where one was employed to oil dangerous machinery, the guard or fence around which was broken, and of the dangerous character of which he had complained, the employer was liable for damages to the employe arising from the defect complained of. In this case, though there was a statute requiring the fencing of hazardous machinery, the ruling was nevertheless put upon the general grounds of the master's duty not to subject his servant to extraordinary dangers which he ought to foresee and prevent. We have also a case in point in Snow *v.* The Houstonic R. Co. (8 Allen 441), where the company was held liable to an employe for an injury caused by the want of proper repairs in its road-bed. In both these cases the defects from which the accidents arose were known to the employes, but as they were injured in the discharge of duties imposed upon them by their employers, such knowledge was adjudged not to raise a presumption of concurrent negligence. This doctrine is obviously just and proper. The servant does not stand on the same footing with the master. His primary duty is obedience, and if, when in the discharge of that duty he is damaged, through the neglect of the master, it is but meet that he should be recompensed. The general principle, as recognized by our own cases, *inter alia*, Caldwell *v.* Brown (53 Pa. 543), and Frazier *v.* Pennsylvania R Co. (38 Pa. 104), is, that the employer is bound to furnish and maintain suitable instrumentalities for the work or duty which he requires of his employes, and, failing in this, he is liable for any damages flowing from such neglect of duty." Furthermore, whether the implement or machine is reasonably safe and suitable for the work for which it was designed is a question of fact for the jury. (Phila., Wil. & Balt. R. Co. *v.* Keenan, 103 Pa. 124; Rummell *v.* Dilworth, 111 Pa. 343. See § 38.)

59. We will now review the decisions which turned on the applica-

tion of this rule. The first case that may be described is Rummell *v.* Dilworth (111 Pa. 343), in which the injury happened to a miner through the inefficient protection of machinery. His leg was caught in cog-wheels, which it was maintained ought to have been better protected, while reaching over to perform a necessary operation—the closing of a gate. The opinion of the court was delivered by Mr. Justice Clark, who, after remarking it was agreed that the machinery was not properly protected, and that Rummell could easily see that it was not, and that in accepting employment he accepted the risk, continued: "It is certainly true that the cog-wheels were open and fully exposed to view; this is precisely what is complained of; the closing of the gate required the operator to reach over these cog-wheels whilst in rapid motion; this too was open and obvious; but the danger to be apprehended in closing the gate did not wholly depend upon these facts which were patent. The safety of the operator depended largely upon the amount of exertion required to accomplish the act in each instance, under these circumstances of danger. A man may at arm's length perform with reasonable safety an act which would become exceedingly perilous if the effort required were greatly increased. So, too, a strong and vigorous man might, and doubtless would, perform the work with much greater ease, and therefore with much greater safety than a man of more moderate powers. One of the witnesses testifies that sometimes the gates 'are hard to pull' 'you have to pull them together as tight as you can,' from which we may readily infer that sometimes they are harder to close than at other times. Actual experience only, therefore, could fully disclose to the plaintiff the degree of peril he assumed. The cog-wheels in rapid motion were certainly open to the view of the plaintiff, but whether he was liable to be drawn into them depended upon matters with which he was totally unacquainted, and which he could learn only by actual experiment. He was young and without experience, had only been on duty for four days, and had opened the gate but two or three times previous to the injury. The plaintiff cannot be supposed or assumed to have accepted in advance a peril which he could not estimate, and the extent of which, from the lack of experience, he could not have known. When there is any doubt whether the employe was acquainted, or ought to have been acquainted, with the risk, the determination of the question is necessarily for the jury." In another case the duties of a boy required him to be at the chutes of a coal breaker. A particular entrance to them was pointed out to him, but the other boys who were employed with him, went several ways indifferently. The chutes were small, close and unsafe, and with the knowledge and without the disapproval of the company the boys were accustomed to go upon the platform, which was over a pit. The boy whose death occasioned the suit in question had been at work only a short time when he was discovered

by the foreman on the platform. He should have been at the chute, and hurrying back fell into the pit and was killed. The question was properly let for the jury to determine whether the company had properly protected the boy, and whether he was engaged in his employment at the time of the accident. Furthermore, it was decided that he was not guilty of contributory negligence (Pennsylvania Coal Co. *v.* Nee (13 At. Rep. 841).

60. In Shaffer *v.* Haish (110 Pa. 575, 578), Mr. Justice Paxson declared that "it was the duty of the defendants to furnish those in their employ with ordinary machinery, such as with reasonable care may be used with safety. This was the precise measure of their duty; nothing more; nothing less. They are not bound to insure against accidents. So long as leather will stretch and iron will break accidents will occur, nor are they to be held liable where an employe is injured in whole or in part as the result of his own negligence." In this case the plaintiff sought to recover on the ground that he was not furnished with a safe machine to operate. He failed to establish his case.

61. In Wannamaker *v.* Burke (111 Pa. 423, 429), the plaintiff fell through a hole in the floor which was not in the ordinary line of travel and which was partly unprotected for a few days while repairs were in progress. Mr. Justice Paxson, who declared the opinion of the court, said: "If the hole had been in the middle of the room near a passage way, or where persons were accustomed to pass and repass in the regular course of business, it would have been perhaps a question for the jury whether leaving it uncovered or insufficiently protected, even for a short space of time, was not negligence. But here was a small hole in the floor on the extreme side of the building, within one inch of the wall, outside of the ordinary walks of any one, which had always been carefully guarded until the alterations rendered it necessary to take the guards away; which was being used constantly during the alterations to get rid of the sweepings; which was only open from two to four days while the alterations were in progress, and only open then when not in actual use; which was intended to be and was permanently covered as soon as the alterations were finished. And even as it was the plaintiff had to pass the obstruction of the girder before he fell into it. The defendants could not have anticipated such an accident as this as likely to flow from the condition of the hole at that time, and they are not to be held to a rule which would prevent the possibility of an accident. If they took reasonable care to provide a safe room for their employes to work in, it was all the law requires. It would be unreasonable to hold them to the same degree of strictness during alterations to the building as might be required after such alterations were completed. The fact that alterations were being made in the presence of the employes was notice to them of the possibility of danger of some sort, and of the necessity of exercising greater caution." On another

occasion an employe was injured by getting his foot into a hole in a dark place. It had been closed a few days before, the same employe assisting in the work. The hole had been reopened, though without the defendant's knowledge. The employe was properly nonsuited in the opinion of the supreme court (Rick *v.* Cramp, 12 At. Rep. 495). "As the plaintiff had previous knowledge of the hole," so the court remarked, "and had helped to close it up, it was quite as much his business as that of any one else to see that it had remained as he had left it."

62. In Mansfield Coal & Coke Co. *v.* McEnery (91 Pa. 185), the widow of an employe who lost his life by falling from the company's bridge, sought to recover on the ground of negligence in its construction. But the court decided otherwise. As the case has been fully described under another head nothing more need be said here. In Everson *v.* Rollinson (8 At. Rep. 194), the person injured was employed by the operator of a furnace, which was situated on one side of a creek, while the coke was transported over a bridge from the other. The injury was caused by the falling of the bridge when transporting the coke. The question of its soundness was left to the jury, who rendered a verdict for the plaintiff, and which the supreme court refused to disturb. In another bridge case (Peck *v.* Del. & Hudson Canal Co., 3 Luz. Legal Obs. 21), the injured employe contended that the breaking of the bridge was caused by using a defective iron bolt, which was put in by another employe of the company. The defect was unknown to the company and could not be discovered by ordinary examination. Furthermore, the workman was reputed to be competent. The company was not liable.

63. In Simpson *v.* Pittsburgh Locomotive Works (139 Pa. 245), the plaintiff's husband was killed by the bursting of an emery wheel. Judge Collier thus described the nature of the accident: "The wheel was construed and set up in a proper manner, and in a proper place, and for a proper purpose. Nor is there any evidence to show that there was any defect in the emery wheel, which was known or ought to have been known, by reasonable care and diligence. What caused it to burst no one knows, at least so far as the evidence is concerned. It appears to have been one of those sad and unfortunate accidents the cause of which is unknown. Unless the plaintiff can establish that the machine was either improperly constructed or set up, or that there was some defect in the emery wheel, which was known or ought to have been known, there can be no recovery." The motion to take off the nonsuit was refused, and the supreme court sustained the action of the lower court. In Augerstein *v.* Jones (139 Pa. 183), the employe was also injured by the bursting of an emery wheel. It was constructed in the usual manner. The employe tried to show that the accident would not have happened if a different device had been adopted.

Having been such as is ordinarily used the law's demand was met and nothing could be recovered of the employer.

64. In Phila. Iron & Steel Co. *v.* Davis (111 Pa. 597), the plaintiff was injured by the breaking of machinery. A piece broke, but the engineer continued to run the machine when he ought not, and soon after another piece broke, from which Davis, who formed one of a gang working near the machine, was injured. It was decided that the company could not be charged with neglect in introducing such a machine in the beginning, that it seemed to be suitable for the work, and that Davis could not, therefore, recover, as his injury was proximately due to the negligence of the engineer in running the machine after the first break occurred.

65. In Phila. & Reading R. Co. *v.* Huber (128 Pa. 63), a brakeman in assisting to shift a train jumped upon a car as the train was about to move. While engaged in performing his duties he fell upon the track, was run over and killed. There was evidence showing that the brake was defective and dangerous, and had been negligently permitted by the company to remain so; that the defect was discoverable when attempting to use it, though its dangerous character was not manifest under a moderate pressure; but no prior knowledge of its condition by the brakeman was shown. He had only two or three minutes in which to become acquainted with the condition of the brake and determine whether or not he would use it or abstain from using it as unsafe, during which time he was necessarily occupied in uncoupling the cars and calculating and regulating their movement. There was no direct evidence that the defective brake caused the brakeman's fall, or that he was in the act of braking when he fell; but he was seen putting on the lever just before his fall, and witnesses testified that such a fall might easily result from the slipping of the lever in an attempt to work the brake. On these facts the case was properly submitted to the jury with instructions to determine whether the defect in the brake was the cause of the brakeman's fall, and, if so, whether he knew at the time of using it of its unsafe condition, and used it with and notwithstanding such knowledge. The supreme court, in reviewing the evidence, said: "The only other serious question in the cause was, whether there was sufficient testimony to leave to the jury the question whether the deceased fell from the car in consequence of the defect in the brake. There was no direct and positive testimony to this effect * * * The testimony of the witnesses who saw the deceased at his post immediately before he fell, is corroborative in its character, and as several of them described how a fall might very easily result from the slipping of the lever in the effort to work the brake, it is scarcely permissible for a court to say that a jury might not infer that the accident occurred in that way. Nor can it be said that this was a case in which the employe was better acquainted with the defect than the em-

ployer and should have given information of it and abstained from using it. The evidence fails entirely to show such a state of facts. If it had shown them, we would not hesitate to apply the rule of contributory negligence. But here the testimony was very abundant that the company enforced a system of daily inspection of all cars at the place of this accident, and if this had been thorough the defect in this brake should have been discovered. As to the deceased there is no evidence that he ever handled or even saw this brake until he attempted to use it on this occasion. In such circumstances it would not be proper to visit him with the consequences of a knowledge of the defect, and a voluntary use of the brake notwithstanding such knowledge. The question of Huber's knowledge of the condition of the brake and of the manner in which he used it, whether negligently or otherwise, was very carefully and correctly left to the jury, and by the verdict it has been found that he was not negligent." In the case of Phila. & Reading R. *v.* Hughes (119 Pa. 301), a brakeman was injured by a broken brake. He endeavored to show that the company was negligent in using it. When Hughes stepped upon the brake, the iron pin, which passed through the fork at the lower end and formed the fulcrum of the lever which held the brake block in place, either broke or dropped and Hughes fell to the ground and under the wheels. This pin was ordinarily kept in place by a key, but as neither the pin nor the key was afterwards found, it could not be ascertained whether the pin was broken or whether it fell out from a defect or displacement of the key. In reviewing the evidence the supreme court, speaking through Mr. Justice Clark, said: "Was there any defect in this brake which any reasonable provision for inspection would have disclosed? Bearing in mind that the burden of proof rests upon the plaintiff, is there any evidence that the pin was defective? * * * Did the pin break at all? If it did, was it the result of accident or negligence? If the pin did not break, says the plaintiff, it fell out from displacement of the key. Is there any evidence that the key had fallen out or been removed? Was the jury to guess at the real facts of the case and to determine these questions of fact upon mere conjecture? The plaintiff undertook to trace the injury to the negligence of the company, and until he can show some negligent act which was the proximate cause of his injury he cannot recover. We know that when Hughes stepped on the brake with his whole weight it went down, and that he went with it. But whether the pin broke from any defect which a proper inspection would have disclosed, does not apear; that it broke at all is not shown, nor is there any evidence that the occurrence was owing to a dislocation of the key. It devolved upon the plaintiff to show negligence of the company, and that that negligence was the proximate cause of the injury. In this he has failed, and in the ab-

sence of proof on that point we cannot ascribe the accident to that cause."

66. A railroad company must exercise reasonable care in procuring suitable brake-chains, and in maintaining and repairing them. (Phila. & Reading R. Co. *v.* Agnew, 11 W. N. Cas. 394). A brakeman on a coal train lost his footing in consequence of the snapping of the chain of a brake which he was tightening, and was thrown on the track and killed. The chain had been repaired at the shops of the company by inserting the link which broke and caused the accident. At the place where it occurred there was a heavy strain on the brake, and the snapping of brake chains was frequent and unavoidable and usually occasioned no injury to brakemen who were careful in performing their duty. Frequent examinations of its cars were made by the company, and the one to which the chain in question was attached had been examined on the morning of the accident. The question having been left to the jury to decide whether the company had exercised reasonable care in providing and maintaining a suitable chain, with the further instruction that if the company had not exercised such care and, on the other hand, the deceased had not been guilty of contributory negligence, the plaintiffs could recover, a verdict was rendered in their favor. The supreme court in reviewing the case refused to disturb it.

67. In Faber *v.* Carlisle Mfg. Co. (126 Pa. 387), the plaintiff proved that the employes in the shop, when operating lathes to turn crank-shafts of a lighter weight, used anything they saw fit as a counter-balance, and that a piece of iron weighing forty pounds thus used, but improperly secured, flew off and struck and injured him. He also proved that in turning crank-shafts of a heavier weight, an appliance practically devised for a counter-balance was used, but failed to prove that such an appliance was generally used in turning shafts of the lighter weight. It also appeared that the plaintiff had been an apprentice in the shop for four years, knew how these lathes were operated, but no complaint had been made to the company. The court below entered a judgment of nonsuit, because (1) if there was negligence in the case it was that of the foreman of the lathe in not properly securing the counter-balance, and (2) the evidence failed to disclose that the proprietor of the shop was at fault in not providing a superior counter-balance. The supreme court sustained the judgment, declaring that, on examination, the case failed to satisfy them that the court below had committed any error in nonsuiting the plaintiff. "If there was any negligence in the case it was that of the foreman of the lathe in not properly securing the counter-balance. The piece of iron which was used was as safe as any other piece of iron had it been properly secured. The plaintiff's own testimony showed that it was the business of the foreman to secure it. There was no evidence to show that any superior kind of counter-balance was in general use. The fact

that the defendant company had another kind in use for a larger machine did not prove anything. Especially, it did not show that they had any reason to suppose the one which caused the accident was not safe when properly fastened. It is often easy to see after an accident has occurred how it might have been avoided. But an employer is not an insurer of the safety of his employes. If he furnishes machinery and tools for the use of the latter which are reasonably safe, it is all the law requires, and he is not bound, under the peril of being mulcted in damages for an accident, to employ every new device or improvement the moment it is invented. This is familiar law."

68. In Bier *v.* Standard Mfg. Co. (130 Pa. 446), the plaintiff was injured by the falling of an elevator. It was an old one, fitted with a rope which had once parted, and twice before the elevator had fallen. The jury rendered a verdict for the plaintiff. In reviewing the case the supreme court said: "An elevator needs, and should have, constant care and inspection. The friction of the rope is constantly wearing the strands, and when they part it is necessarily weakened. Under the circumstances, we cannot say the learned judge erred in refusing this point." Nor did the lower court err in refusing to give a binding instruction in favor of the defendant. "It was a case for the jury and could not have properly been withdrawn from them." In another case (McKinnie *v.* Kilgallon, 11 At. Rep. 614), an employe in a hotel was riding in a freight elevator, that was not suitable for the safe transportation of persons, but which employes were required to use when at work. The employer was liable.

69. In Kennedy *v.* Pennsylvania R. Co. (17 At. Rep. 7), an employe, at the time of his death, was working on the track with his back to a dirt train, which approached him with the engine reversed. The train had been thus running daily for more than a year previous to the accident over the section on which he worked. It was contended that this method of pushing the cars in front of the engine was dangerous. Whether it was so or not, the court declared was one of the risks assumed by the deceased. Likewise in Hawk *v.* Pennyslvania R. Co. (11 At. Rep. 459, 460), an injured employe contended that the company was negligent in moving its trains by using two engines at the head, instead of one at either end of the train, thus relieving the strain on the couplings, from the breaking of which he was injured. In his opinion President Judge Bucher remarked: "It is a complete answer to this to say that it has been repeatedly held that the master may conduct his business in his own way; that the plaintiff took service with the company which resorted to this method of double heading. He should have declined entering upon, or abandoned the service after entering upon the same, when he discovered the company's method of propelling trains in this way by means of double-heading."

70. Another application of the principle was made in Lehigh &

Wilkes-Barre Coal Co. *v.* Hayes (128 Pa. 294). The negligence charged to the company was its failure to provide any appliance for warning employes that a draw of coal was to be made. Mr. Justice Green, who reviewed the case, said: "Upon the trial of this cause no evidence was given by the plaintiff to show that the defendant's breaker, and the machinery used in crushing and screening coal, was in any manner defectively built, or that it was not built in the same manner and with the same appliances as are used in all similar structures. The single act of negligence in this regard alleged against the defendant was, that it had no appliance and used no means or method by which warning could be given to persons working in the pocket, that a draw was about to be made. No evidence was given to show that it was customary among coal operators to give any such warning in the conduct of their collieries. It follows that there was no proof that the defendant neglected any of the precautions which were usually observed in carrying on the business of crushing, screening and shipping coal." In Cambria Iron Co. *v.* Shaffer (8 At. Rep. 204), the negligence charged was in not having a man-way from a slope-mine to the surface in proper form or condition as required by statute, which prescribed the construction and maintenance of such an opening in addition to the slope. Whether the law had been observed or not was regarded a proper question for the jury. In Silliman *v.* Marsden (9 At. Rep. 639), a miner sought to recover for injuries sustained in consequence of the mine owner's negligence in constructing and maintaining a proper heading in his mine. The question was left to the jury, who found a verdict for the miner, which the supreme court refused to disturb.

71. In Lee *v.* Electric L. H. & P. Co. (140 Pa. 618), an employe was sent aloft to adjust some machinery. There were two ways of going; one was comparatively safe and the other dangerous. He took the dangerous way without knowing it was so, and was injured by attempting to swing around a brace which fell from its place, whereby he was thrown to the floor. The building was properly constructed, but there was evidence that this brace and others supporting the roof had become loosened; and the superintendent of the company had knowledge of the fact that the braces needed tightening by bolts and burrs and the repairs had been ordered but had not been made. As the company had knowledge of the defective brace, but did not communicate this to the employe, and suffered him to go as he did without warning, the question was regarded as proper a one for the jury to determine whether the company was negligent or not. Having returned a verdict in favor of the employe the supreme court refused to set it aside.

72. In McAvoy *v.* Pennsylvania Woolen Co. (140 Pa. 1), an employe sought to recover from a personal injury caused by the breaking of an implement which he was using. This was a fork with which he

pressed cotton into a vat of boiling dye. It broke while he was using it and he was thrown into the vat and seriously injured. The defect in the instrument was latent, of which the employer had no knowledge, and he was declared to be not liable.* Again, a workman was employed at an iron mill in pushing a "buggy" loaded with iron over a tramway which had become so defective that when in motion, on one occasion, the iron fell off and injured a workman. In an action to recover there was some evidence that the load was improperly placed, but there was none showing that the employer had knowledge of the defect in the "buggy." It was held that the injured employe was chargeable with knowledge of the defect, because he either saw it and assumed the risk, or failed to see what was plainly visible and which he ought to have seen, so that in either event, he could not recover. Furthermore, if the accident was the result of improper loading this was the negligence of a fellow workman, for which the employer was not liable (Bemisch *v.* Roberts, 143 Pa. 1).†

73. An employer, however, is not required to provide the very best tools, machinery or other appliances. If those furnished can be used by ordinary care without danger, the employer's duty is fulfilled, and he is not responsible for accidents that may happen from using them.‡ Thus, in Payne *v.* Reese (100 Pa. 301, 306), Mr. Justice Gordon said: "An employer is not bound to furnish for his workmen the 'safest' machinery, nor to provide the 'best methods' for its operation, in order to save himself from responsibility for accidents resulting from its use. If the machinery be of an ordinary character, and such as can, with reasonable care, be used without danger to the employe, it is all that can be required from the employer; this is the limit of his responsibility and the sum total of his duty." Mr. Justice Clark has stated the rule in the following language, in a case against a railroad company: "It was the duty of the company to exercise ordinary care in adopting, providing and maintaining safe cars, with suitable appliances and machinery, with which the plaintiff might transact the business of the company within the line of his duty; not the very best machinery which could be procured, or that which combined the latest device or improvement, as a precaution against danger, but such as was reasonably safe and in common use" (Phila. & Reading R. Co. *v.* Hughes, 119 Pa. 301, 312). The rule has been considered more fully by

*For other cases see Iron Ship-Building Works *v.* Nuttall, 119 Pa. 148; Schall *v.* Cole, 107 Pa. 1, and §§ 192–202.

† A foreman of men engaged in making an excavation in which horses are used, cannot recover for an injury caused by one which was known to be vicious, as one of his duties consists in knowing the character of the horses used, and in sending away those that are unfit for the work (Smith *v.* Drake, 17 At. Rep. 449).

‡Pittsburgh & Connellsville R. Co. *v.* Sentmeyer, 92 Pa. 276; Bemisch *v.* Roberts, 143 Pa. 1; Rummell *v.* Dilworth, 111 Pa. 343, 350.

Mr. Justice Mitchell, in Titus *v.* Bradford, etc., R. Co. (136 Pa. 618): "All the cases agree that the master is not bound to use the newest and best appliances. He performs his duty when he furnishes those of ordinary character and reasonable safety, and the former is the test of the latter; for, in regard to the style of implement or nature of the mode of performance of any work, 'reasonably safe' means safe according to the usages, habits and ordinary risks of the business. Absolute safety is unattainable, and employers are not insurers. They are liable for the consequences not of danger but of negligence; and the unbending test of negligence in methods, machinery and appliances is the ordinary usage of the business. No man is held by law to a higher degree of skill than the fair average of his profession or trade, and the standard of due care is the conduct of the average prudent man. The test of negligence in employers is the same, and however strongly they may be convinced that there is a better or less dangerous way, no jury can be permitted to say that the usual and ordinary way, commonly adopted by those in the same business, is a negligent way for which liability shall be imposed. Juries must necessarily determine the responsibility of individual conduct, but they cannot be allowed to set up a standard which shall, in effect, dictate the customs or control the business of the community." In this case Titus claimed that it was negligence to use standard car bodies on a narrow gauge railroad, but it was shown that the railroad company and two other narrow gauge railroads used them. This was a regular part of the business of narrow gauge railroads, and no attempt was made to show that the way in which it was done here was either dangerous or unusual.

74. The ground of liability is negligence, not danger, and the test of negligence is declared to be the ordinary usage of business.* Undoubtedly the correct ground of liability is negligence, but that usage is the true test of negligence is questionable. In Ford *v.* Anderson (139 Pa. 261), the plaintiff was injured by a belt and the court remarked that, "it was not shown that it is usual to have belts inclosed, though perhaps they ought to be." If they ought to be why should the court accept of usage as a correct standard of duty? A general usage in using machinery is indeed evidence or proof of its safety. That the usage is not always safe is the reason for action by legislatures in requiring belting and machinery to be secured from danger. All legislation of this character springs from usage, yet whatever this may be the courts deem themselves bound to regard it. Ought they to permit employers to shield themselves behind a bad usage? Ought this not to be regarded simply as evidence, by no means conclusive, that the machinery used is reasonably safe or does need protecting?

*Ford *v.* Anderson, 139 Pa. 261; Titus *v.* Bradford, etc., R. Co., 136 Pa. 618; Moules *v.* Del. & Hudson Canal Co., 141 Pa. 632. See § 38.

75. As an employer is not required to provide the newest and best machinery, neither is he required to adopt a special device which is not generally used. Says Mr. Justice Green, in the case of the Northern Central R. Co. *v.* Husson (101 Pa. 1, 7) : "It by no means follows that because of an accident to such an employe while performing his duty the employer is liable simply for the reason that the particular accident might have been prevented by some special device or precaution not in common use."*

76. Furthermore, an employer is not required to adopt those devices which after an accident it is seen would have been effective to prevent it.† For, only through accidents are many imperfections discovered. Before they are known employers ought not to be held liable; but after they are known, then ought they not to be responsible if nothing is done to remedy them? Thus in Augerstein *v.* Jones (139 Pa. 183), the plaintiff was injured by the bursting of an emery wheel, and recovered a verdict. The judge told the jury that if the accident could have been prevented by the adoption of a device which was not adopted, the employer was negligent. The supreme court declared this to be an erroneous instruction. Said Mr. Justice Green: "We have thus seen that the rule of duty on the part of the defendants was to provide ordinary machinery, such as was reasonably safe for the work to be done, and not to provide such as would either insure the plaintiff against injury, or be of the very best and newest device attainable. If this was done the defendants are not liable, athough the plaintiff was injured without fault on his part. Instead of this rule being given to the jury, with an instruction to find whether the wheel was set in its frame in the ordinary and usual way so as to be reasonably safe, the jury was told that if the accident could have been prevented by screwing down a heavy iron plate over the wheel so as to avoid injury to the plaintiff, and this was not done, and the injury resulted from that cause, the plaintiff would be entitled to recover. That this was error is too plain for argument. Practically, it would require that employers should provide such machinery as would suffice to insure their employes against accidents."

77. The employer, therefore, must provide his workmen with safe tools and appliances, but they need not be the safest. Changes are

*Stack *v.* Patterson, 6 Phila. 225.

†"Almost all accidents could be avoided if the especial manner of their occurrence could be foreseen." Green, J., Northern Central R. Co. *v.* Husson, 101 Pa. 7. In Iron-Ship Building Works *v.* Nuttall, 119 Pa. 149, 158, Williams, J., said: "There is risk and liability to accidents in all employments, but the law does not require an employer to protect his employes against the possibility of an accident. He is bound to provide suitable machinery and implements for their use, see that they are in reasonable order, and that the usual precautions against accident are taken. The possibility of accident which lies beyond, is a risk which every mechanic and every laborer takes and must take as incidental to every form of activity." In Drew *v.* Gaylord Coal Co., 4 At. Rep. 214, 218, the court said: "The company is not bound to protect its employes against possible dangers. Its full duty is performed by guarding them against those reasonably probable."

constantly made, but more especially in introducing machinery that will economize labor. Whether this is always the safer is quite another question. But legislatures everywhere are enacting more stringent regulations to put such guards around machinery as will more adequately protect those who are employed to use it. All appliances, however, will wear out, or become impaired by use, and it is the duty of those who use them to give notice of all imperfections they discover to their employers, or to their representatives. If they omit to do this and sustain an injury, they cannot recover. This requirement is reasonable, for the employer himself does not operate the machine, and he can learn of its condition usually, unless he employs inspectors, only through those who do. Regard for their lives ought to incite them to report all defects as soon as they are discovered. Consequently the employer is not negligent if a tool or machine breaks, whether from an internal original fault not apparent when the tool or machine was at first provided, or for an external apparent one produced by time and use not brought to the employer's knowledge.* "These are," says Mr. Justice Sharswood, "the ordinary risks of the employment which the servant takes upon himself."†

78. Furthermore, as the vice principal acts in a truly representative capacity, an employe fulfils his duty when notifying him of a defect in a machine, or of an incompetent servant, or of any other fact which it is his duty to communicate to his employer (Patterson *v.* Pittsburgh & Connellsville R. Co., 76 Pa. 389).

79. Sometimes, however, employers have an inspection or examination of their machinery. When this is done two questions arise: First, must employes report defects discovered by them as though there was no inspection, and will they fail to recover for subsequent injuries if neglecting to do this? and, second, if they discover no defects and consequently report none, and are subsequently injured, can they recover? If the inspector is negligent in his inspection, ought not the employe, who may be supposed to be better acquainted with the condition of his tools or machinery than any one else, to report any defects that he discovers? This supposition is not always correct, for an inspector sometimes has a knowledge of machinery superior to that of any workman, and, therefore, if he did his duty faithfully, might discover defects which the workman could not. In Phila. & Reading R. Co. *v.* Hughes (119 Pa. 301, 314), Mr. Justice Clark declared that "it is undoubtedly the duty of railroad companies to exercise ordinary care in the maintenance of the machinery and tools which they put into the hands of their employes, and to institute proper reasonable regulations for the safety of their employes in this respect;

*Patterson *v.* Pittsburgh & Connellsville R. Co., 76 Pa. 389; Phila. & Reading R. Co. *v.* Hughes, 119 Pa. 301, 314.

†Baker *v.* Allegheny Valley R. Co., 95 Pa. 211, 215; Ryan *v.* Cumberland Valley R. Co., 23 Pa. 384.

but this rule of duty must be taken in a practicable and reasonable sense. The company does not insure the life of its employes; the servant assumes, as we have said, the ordinary risks of his employment, and if any defect in the tools or machinery placed in his hands becomes apparent in their use, it is the duty of the servant to observe and report to his employers, for the servant has means of discovering defects which the master may not possess. If, however, the company employ competent and skilful persons for the purpose of inspection, and afford them reasonable opportunities and facilities for the work under proper instructions, the company will not ordinarily be liable for the negligent performance of the work by their employes, to a fellow employe, unless the company knew, or by ordinary diligence ought to have known, of the defective manner in which the inspection was conducted."*

80. This requirement on the part of the employe to give notice of defects that appear in the tools or machinery he is using, does not exist in all cases, but only in those in which the tools, machinery or other appliances are of a somewhat permanent character. It does not apply to tools or machinery that are perishable. When they are used, the employer knows that they will last only a limited time and he must renew them at proper intervals (Baker *v.* Allegheny Valley R. Co., 95 Pa. 211). This principle was applied in the case of an employe of a railroad company who was killed when at work, by the breaking of a rope used in a derrick. The rope appeared to be sound, but had been used two or three years and was continually exposed to the weather; and there was some evidence that it was rotten when the break occurred. Mr. Chief Justice Sharswood, in reviewing the case, said: "Do these rules apply to such an instrument as a rope used in a derrick which is employed in raising heavy weights? No doubt a perfectly new rope, and one to all appearances sound, may break, and the master would not be responsible for the consequence, having furnished a rope of the proper size for the purpose, to all appearance sound. But there was evidence in this case, sufficient, certainly, to make a question for the jury, that such a rope after having been used for a year or more, and exposed during that time, as the one in question seems to have been, was no longer a safe rope, even though it did not outwardly exhibit any signs of decay. The master is bound to know that a rope under such circumstances will only last a limited time. It will not do for him to furnish a sound rope and then fold his arms until, by actually breaking, it is demonstrated to be insecure. It will not do to say that the servant is bound to know this as well as the master, and to warn him that after such a time he ought to procure a new rope. Is the servant bound to notify the master of that which he knows or ought to know himself without such information? He knows how long

*See Cooper, Hewitt & Co. *v.* Butler, 103 Pa. 412.

the rope has been in use. The servant may not know. In this case the deceased did not know. It appears to have been the first day that he worked on the derrick. There was nothing to attract his notice in the outward appearance to show how long it had been in use. It is the duty of employers to renew instruments of this character at proper intervals. The expense would certainly not be great, and a due regard to the lives of their servants imperatively demands it."

81. Suppose defects in machinery appear, the employer is notified, and steps are taken to repair them; but before their completion an accident happens, is he liable? Ought not the answer to turn on the promptitude of his action in making the needful repairs? If he was slow when he ought to have acted at once, he should be responsible for the consequences. This question arose in Murphy *v.* Crossan (98 Pa. 495). The owner of a hotel was informed by the engineer of the baggage elevator that the wire rope sustaining it was in a bad condition and should be renewed. The owner shortly afterwards ordered a new rope to be made. During the process of making it, and before its completion, the elevator was run as usual. The baggage porter in charge of it was not informed of the conditon of the rope nor could he see it or judge of its condition. While engaged in lowering trunks on the elevator in the ordinary course of his employment the rope broke and the porter was injured. Mr. Justice Paxson said: "There was evidence that the defendant had been notified sometime before the accident that the wire rope used for the baggage elevator was worn out. The defendant replied that he had seen it; the rope was bad, and that he had ordered a new one. In the meantime he continued to use the old rope and, so far as the testimony shows, without any examination to ascertain whether it would be safe to use it until the arrival of the new one, and without informing the plaintiff, who was a baggage-porter employed in taking baggage up and down on the elevator, that it was unsafe, or giving him any caution to use it with more care, or carry lighter loads. It is to be observed that the rope was so situated that the plaintiff could not see it or judge of its condition. Under these circumstances we think that the defendant assumed the risk of the breaking of the rope. It was true he was not an insurer of its soundness. He is to be held to the rule of reasonable care, and may be able to satisfy a jury that he has done all that such a rule requires. All we decide is that the evidence was sufficient to carry the case to the jury" (See § 45).

82. Not only must the employer select fit servants and safe tools, machinery and other apparatus, but he must also select suitable materials for his employes to use. This rule has been applied on several occasions In the case of Ross *v.* Walker (139 Pa. 42, 50), a person was injured while erecting a scaffolding, from the breaking of a timber which was caused by a knot. The testimony tended to show that the

knot was visible on the surface, though it was larger in the interior of the timber, and that an ordinary inspection would have discovered the defect. The work was done for Walker, who employed a foreman named Duffey. No question was raised concerning his competency, and that of the other workmen, who were employed with Ross; and there was no evidence of negligence in the construction of the scaffolding, except in the use of this defective piece of timber. A verdict having been rendered for the plaintiff, Mr. Justice Williams, in reviewing the case, said: "It was the duty of Walker, as employer or principal, to provide the men employed to build this bridge with suitable machinery and apparatus; to furnish materials sufficient in quantity and suitable in character; to employ men who are reasonably competent to do the work for which they were wanted, and to give them the benefit of the services of a reasonably competent foreman. All this, as we understand the evidence, was done. * * * It was not material to this inquiry to know whether 'Duffey had entire charge and control of the work' as a foreman or not; nor to know whether he selected from the mass furnished by the employer the materials to be used for any particular purpose or not. * * * Duffey, if he did select the timber, which is more than doubtful under the testimony, did not represent Walker as a vice-principal in such selection. He and his fellow workmen were to judge of the suitability of the pieces of timber they used for the uses to which they put them, and their error in judgment, or their careless discharge of this duty, was their fault or failure, and not that of their employer. He had discharged his duty when he furnished an abundance of materials from which they could select what was needed. The actual selection out of this stock, of the sticks needed from time to time was not his duty, but that of the workmen themselves. If there was a visible defect in a stick, common prudence and common care on their part would have rejected it, and supplied its place with another out of the stock at their command."

83. Another case in which this rule was applied is the Allison Mfg. Co. *v.* McCormick (118 Pa. 519). The person injured was painting the inside of a tank. He had been at work a quarter of an hour when an explosion occurred and the tank was filled with flame. The jury rendered a verdict against the company. In reviewing the case Mr. Justice Williams inquired what evidence was presented to show a want of care or failure of duty by the company? "The work to be done was the painting of the interior of a water-tank. The material employed was a well-known and commonly used brand of paint. It was purchased from the manufacturer ready for use. The laborers were sent to do the work under the direction of the company's painter, who went with them, placed the men and gave them their directions. The paint had been in use by the public for many years, and by the defendant company for ten or twelve, without accident of any descrip-

tion. It is not easy to see what more could have been expected from an employer. * * * In the present case the work at which McCormick was employed was not a dangerous one. The place was not one that could be regarded as in any sense dangerous. The materials were those in common use for the purpose for which they were used by the defendant. The work was done under the supervision of a competent painter. The accident happening under such circumstances was outside the range of ordinary experience, and one, therefore, against which the measure of care due from the employer could not protect the servant. To hold otherwise would be to disregard the well-settled law upon the subject, and to make the employer an insurer of the safety of his employe."*

84. The employer must also select a suitable place for the employment of his employes. Says Mr. Justice McCollum (Trainor *v.* Phila. & Reading R. Co., 137 Pa. 148, 159) :† "The master owes to the servant the duty of providing a reasonably safe place to work in." Mr. Justice Mercur has stated the duty more fully (Green & Coates St. Pass. R. Co. *v.* Bresmer, 97 Pa. 103, 106) : "A master does not warrant his servant's safety. He, however, is under an implied contract with those whom he employs, to adopt and maintain suitable instruments and means with which to carry on the business in which they are employed. This includes an obligation to provide a suitable place in which the servant, being himself in the exercise of due care, can perform his duties safely or without exposure to dangers that do not come within the reasonable scope of his employment."‡ The rule was applied in Tissue *v.* Baltimore & Ohio R. Co. (112 Pa. 91, 98). The company stored a large quantity of dynamite so near the place where one of its employes was working that he was killed by its accidental explosion. In reviewing the case Mr. Justice Gordon said: "Ought the company's superintendent to have known that in placing the magazine where it was placed he was exposing the men engaged in operating the road, as well as others, to a danger to which they ought not to have been exposed? The question is not whether he did have knowledge of the peculiar properties of the material which he was intrusted to handle, for his ignorance in this particular would be no excuse for the company, but whether the agent thus intrusted ought to have been one who knew that dynamite was, from its nature, liable to accidental explosions such as could not be ordinarily foreseen or provided against.

*For other cases see Payne *v.* Reese, 100 Pa. 301; Crawford *v.* Stewart, 19 W. N. Cas. 48; Lewis *v.* Seifert, 116 Pa. 628.

†"It is the duty of an employer to provide his laborers with a suitable place to work, with suitable tools and machinery to use, with suitable materials, and with reasonably competent fellow laborers with whom to work." William J. Ross *v.* Walker, 139 Pa. 42, 48. See also Tissue *v.* Baltimore & O. R. Co., 112 Pa. 91.

‡Cayzer *v.* Taylor, 10 Gray 274; Seaver *v.* Boston & Maine Railroad Co., 14 Gray 466; Gilman *v.* Eastern Railroad Co., 10 Allen 233; Coombs *v.* New Bedford Cordage Co., 102 Mass. 572.

* * * This ignorance, if ignorance it was, will not excuse the company, for there was a duty resting upon it to know as far as it was possible to know, the character of the material which it placed in the hands of its agents. In this we are not to be understood as pronouncing upon the chemical characteristics of dynamite, for about it we know little or nothing, or as charging negligence on the company or its agents. The act of putting the magazine where it was may have been prudent, or at least not unreasonably imprudent, and the explosion may have been the result of an accident which no ordinary human foresight could provide against, hence one for which no one can be held responsible. But, however this may be, the matter is, under all the evidence, for a jury, and to a jury it must be referred." In this case the dynamite magazine was located by the superintendent of the work; the act, therefore, was by the corporation itself, and not by a fellow servant of the person who was killed.

85. In Trainor's Case, which has been fully described elsewhere (Trainor *v.* Phila. & Reading R. Co. 137 Pa. 148, § 48), he was injured by the removal of an apparatus for storing coal, the nature of which was unknown to him. The jury having rendered a verdict in his favor the company sought to set it aside on the ground that he assumed the risk by which he was injured. The court declared that an employe asumes "risks which are patent, and latent risks of which he is informed. In the case before us, the pole was not held in place by guys, and it was not set in the ground, its only support was the coal pile around it. "As the support was weakened by the removal of the coal, it was liable at any moment to fall upon and crush the men working at its base. The company knew this, but did not advise its coal-handlers of the danger to which they were exposed. It was a danger which was not patent to one in ignorance of the facts and whose experience and observation had taught him that such poles were either held in place by guys, or securely set in the ground. The same appliances which kept the pole in position while the coal pile was being formed about it, would have held it securely there while the coal was being removed from it. These consisted of guys, which were taken away when the pile was formed and the work of removing it began. It seems from the testimony * * * that the guys were taken away when the pile was complete, upon the theory that they were no longer of use there, and might be in the way of other guys supporting other poles in close proximity. As a substitute for the security afforded by these, a plan was adopted for taking down the pole while the work of removing the coal was in progress. Two poles were taken down safely in pursuance of this plan; but the third pole, to which the apparatus was attached for the purpose of taking it down, fell among the workmen, killing two of them instantly, and seriously injuring others. It is obvious from the description of the plan that

its successful execution required the vigilant superintendence of a competent person, and even thus, speaking for myself, it was dangerous. A slight inconvenience or expense may have been saved by it, but these can have no weight in a matter affecting the safety of the workmen."

86. In Wannamaker *v.* Burke (111 Pa. 423), the employe was severely injured by falling from a hole in the floor through which the dirt and waste were thrown incidental to Wannamaker's business. Usually it was properly protected, but during a short period, while repairs on the building were in progress, it was somewhat exposed, in consequence of which Burke was injured. The case was fully reviewed by Mr. Justice Paxson, and has been already presented (§ 61.)

87. Again, if the employer be a railroad company, it must furnish a safe roadway for its employes, and is liable for the consequences of neglecting this duty.* This rule has been applied on several occasions. In O'Donnell *v.* Allegheny Valley R. Co. (59 Pa. 239, 248), the injury arose from the breaking of a rail which rested on rotten ties. Mr. Justice Agnew said: "A railroad company is bound to furnish a safe and sufficient roadway. It owes this as a duty to all who travel over it. It is true, that remotely its unsafe condition might have been owing to the negligence of some one in its service, who failed to report its condition or put it in repair. But it might also be the mere neglect of the company from false economy to order the repair or to furnish the means. The remote negligence of servants will not excuse the non-performance of such a direct and immediate duty as this. If the sub-structure carrying the rails were suffered to lie until it had become rotten and unsafe, it is the negligence of the company itself, and not merely that of its servants. Casualty from such a cause is not one of those ordinary perils which presumptively every one incurs who takes service with the company. It is not to be likened to the breaking of a rail from frost or mere accident, or from some cause immediately traceable to the negligence of another employe. It would be a cruel exposure of life to hold such a casualty to be an ordinary risk of the service, and it would extend a license to negligence on the part of those whose duty it is to be careful of human life."†

88. In another case (Phila. & Reading R. Co. *v.* Schertle, 97 Pa. 450), a brakeman was engaged on a dark night in coupling and uncoupling cars. In order to couple a freight car to an engine it became his duty to remain on the steps of the engine tank, where he was al-

*In Lewis *v.* Seifert, 116 Pa. 628, 647, Paxson, J., said: "It was very plain that it was the duty of the defendant company, as between said company and its employes, to provide a reasonably good and safe road."

†Mr. Justice Read thought that there should be one rule of duty for passengers and another for employes. "The rule as to strangers, as laid down by my brother Agnew, as to the duties and liabilities of the company with regard to their track, road-bed and machinery, is perfectly sound, but it may have a large qualification as to servants engaging as such with a full knowledge of their state and condition."

ready standing, while the engine backed to the car. He jumped off, however, from the step of the tank and crossed the track, an act which was not necessary. Shortly afterwards the engine was backed, when A. was heard to cry out, and seen to spring back from the tank, the wheels of which almost immediately passed over his body and killed him. No one saw how or why A. fell. There was some evidence that the steps on the tank were defective in number and construction, but A., who had been employed about the engine in question for a long time, had never asked, as was clearly proved, for their alteration, although the company was in the habit of making such changes upon application of their employes, it also appeared that the road-bed was rough by reason of recent repairs. In an action by the widow and children of the employe against the railroad company to recover damages for his death, they alleged that it occurred while he was endeavoring to climb upon the tank, by reason of the failure of the company to provide proper steps and a smooth road bed. It was decided that there was no negligence to submit to a jury, and that the court should have given binding instructions to find a verdict for the company.

89. In McCombs *v.* Pittsburgh & Western R. Co. (130 Pa. 182), the plaintiff, who was a brakeman, was injured while running a loaded freight car on a siding where the rails were put down without fish-plates. The track was a narrow gauge, but the train on which the plaintiff was engaged was composed of broad gauge cars, which had been moved on narrow gauge trucks. At a siding one of the cars was found to be disabled, and it was left there. The plaintiff mounted the car, loaded with lumber, to run it on a siding, and when it reached a curve it turned over and rolled down the embankment, whereby the plaintiff was injured. Witnesses for the plaintiff testified that they examined the track immediately after the accident and that a rail was shoved to one side; that the ends of two rails did not meet, and that there were no fish-plates at the joint. The jury returned a verdict for the plaintiff, which the supreme court refused to disturb.

90. In Oak Ridge Coal Co. *v.* Reed (5 W. N. Cas. 3), a brakeman was required to couple cars while standing on a trestle-work, which he contended was defective. The judge, in submitting the question of its defectiveness to the jury, instructed them that, "if the plaintiff, in obedience to the requirement of the defendant, incurred the risk of the alleged insufficiency and defect of the trestle-work, and though dangerous, it was not so obviously dangerous as to threaten immediate injury, and it was reasonably probable that it could be safely used by great caution and skill, and the trestle and applhances in question were under the daily inspection of the officers of the company, whose duty it was to supply defects and repair injuries to the work; and that the plantiff did in fact exercise the reqnisite caution and skill in his work; and, notwithstanding this, received the injury complained of by rea-

son of the insufficiency and defect of the trestle and appliances furnished by the defendant, he was entitled to recover." This instruction was declared to be free from error. In Erie & Wyoming Valley R. Co. *v.* Smith (125 Pa. 259), the injured person sought to recover for a defect in the track. The court thought otherwise, and the company was not regarded liable. In Ballard *v.* New York, etc., R. Co. (126 Pa. 141), the plaintiff tried to make out a case of negligence by showing that a safety-switch ought to have existed where an accident occurred, and where there was none. The plaintiff was nonsuited and the supreme court regarded this as a correct disposition of the case.

91. A railroad company, however, is not required to ballast its tracks for the safety of its employes. This has been decided in a case already described (Phila. & Reading R. Co. *v.* Schertle, 97 Pa. 450)

92. A railroad company has another duty to perform in framing and promulgating such rules and schedules for the moving of its trains as will afford reasonable safety to the operators who are engaged in moving them. Says Mr. Justice Paxson, in elaborating this rule (Lewis *v.* Seifert, 116 Pa. 628, 647), in a case against the Philadelphia & Reading R. Co.: "This is a direct, positive duty which the company owed its employes, and for the failure to perform which it would be responsible to any person injured as a consequence thereof, whether such person be a passenger or an employe. It would be a monstrous doctrine to hold that a railroad company could frame such schedules as would inevitably or even probably result in collisions and loss of life. This is a personal, positive duty; and, while a corporation is compelled to act through agents, yet the agents in performing duties of this character stand in the place of and represent the principal. In other words, they are vice-principals."*

93. Furthermore, a railroad must exercise ordinary care in adopting, providing and maintaining safe cars with suitable appliances and machinery. Mr. Justice Clark, who thus expressed the duty of a railroad company to its employes (Phila. & Reading R. Co. *v.* Hughes, 119 Pa. 301, 314, 315), further declared: "It is undoubtedly the duty of railroad companies to exercise ordinary care in the maintenance of the machinery and tools which they put into the hands of their employes, and to institute proper regulations for the safety of their employes in this respect." * * * If, however, the company employ competent and skilful persons for the purpose of inspection, and afford them reasonable opportunities and facilities for the work under proper instructions, the company will not ordinarily be liable for the negligent performance of the work by their employes to a fellow employe, unless the company knew, or by ordinary diligence ought to have known, of the defective manner in which the inspection was conducted. * * * [Moreover], a railroad or other employer is not re-

*See Wert *v.* Keim, 13 At. Rep. 548, § 202.

quired to use that exquisite and exhaustive care in the constant examination and overhauling of its machinery and works which would be incompatible with the proper furtherance of business." And if an inspector should himself be injured by a defect, which he could have discovered by a reasonably careful inspection, he cannot recover (Cooper, Hewitt & Co. *v.* Butler, 103 Pa. 412. See §§ 55, 66, 167). In Donaghy *v.* Phila. & Reading R. Co. (21 W. N. Cas. 154), an employe was injured by the breaking of the shaft of a brake. The car had not been inspected during its journey, but it was not the custom to mount cars *en route* to inspect them. As the duty to make inspections, so the court declared, did not require this to be done, the company was not liable.

94. The employer also has a duty to perform in instructing inexperienced persons. Says Mr. Justice Williams (Ross *v.* Walker, 139 Pa. 48): "If they are young or without experience in the use of the tools or machinery they are to handle, it is his duty to see that they are instructed in these particulars, and warned of such dangers as are peculiar to the use and care of the machinery with which their labor brings them in contact." The same justice, on another occasion, said (Rummell *v.* Dilworth, 131 Pa. 509, 520): "In the case of young persons it is the duty of the employer to take notice of their age and ability, and to use ordinary care to protect them from risks which they cannot properly appreciate, and to which they should not be exposed. The duty in such cases to warn and instruct grows naturally out of the ignorance and inexperience of the employe, and it does not extend to those who are of mature years, and who are familiar with the employment and its risks. In the present case Rummell was a lad of about seventeen years, with very little acquaintance with the business or its dangers. He went into the employ of the defendants on Tuesday. He left on Friday of the same week with a leg so crushed that immediate amputation was necessary. He was employed as a 'drag-down,' but was hurt while performing the duties of a 'roller,' in opening and closing the gate between the first and second pairs of rollers. The cog-wheels by which the rollers were moved were covered along the whole length of the train, except at the point over which Rummell had to reach to open and close the gate. If they had been covered at that point the accident could not have happened. In view of the youth and want of experience in the business on the part of Rummell, it was necessarily a question for the jury whether his employer had sufficiently warned and instructed him about the dangers of the employment, and how to avoid them, or had done all that was reasonably necessary to protect him from injury. * * * A workman must know the dangers of his employment by actual experience in the employment, or by the instructions of his employer, before he can be held to have assumed them. In other words, it is not

just to the employe to hold him to have assumed dangers of which he has no knowledge by experience in the business, or by the warning and instruction of his employer. Such risks cannot be estimated, because they are not known to exist, or, because their real character and extent can only be known by familiarity with the business, or information from one who has such familiarity. The court could not declare, therefore, as matter of law, on the facts of this case, that the danger from which Rummell suffered was one, the risk of which he assumed when he accepted employment as a 'drag-down.'" In Davis *v.* Pennsylvania R. Co. (5 Penn. Co. Ct. Rep. 567), the rule was repeated that an employer must point out the dangers of his employment to a newly-appointed servant. Consequently, a railroad company which sent a brakeman, unfamiliar with the risk, over a portion of the road which was dangerous because of low bridges, on a dark night, and without warning, was regarded liable for the resulting injuries.

95. The duty of an employer toward young employes was also set forth in another case tried nearly at the same time as the case just mentioned (Strawbridge *v.* Bradford, 128 Pa. 200). A delivery boy in a mercantile establishment, thirteen years old, was injured while riding in an unguarded lift by which he was required to ascend and descend from one floor to another. The case having been decided against Strawbridge, an appeal was taken to the supreme court, in which Mr. Justice McCollum delivered the opinion: "There was abundant evidence to carry this case to the jury on the question of the alleged negligence of the defendants in failing to provide a reasonably safe elevator for the uses required of the one on which the plaintiff was injured. This elevator was constructed for the purpose of carrying freight. Two sides of it were without guards of any description. * * * It was operated by the defendants for the double purpose of transporting their freight and their employes. From thirty to one hundred delivery boys were required to use it. * * * A number of persons acquainted with the construction and use of elevators testified that this was not a reasonably safe one for the transportation of these boys, and this evidence was not answered. * * * Certainly, upon this evidence the court could not say that the defendants had discharged their whole duty and were guiltless of negligence in the particular complained of. It is claimed, however, that the plaintiff's own negligence contributed to his injury and prevents a recovery, and that the court should have so instructed the jury. But it must be borne in mind that this plaintiff had not attained the age when sufficient capacity to be sensible of danger and to avoid it is presumed (Nagle *v.* Allegheny Valley R. Co., 88 Pa. 35). A boy's capacity is the measure of his responsibility; and if he has not the ability to foresee and avoid the danger to which he may be exposed, negligence will not be

imputed to him, if he unwittingly exposes himself to it.* When an infant who has not reached the age of discretion is charged with concurrent negligence, it becomes important to inquire if he had sufficient understanding to comprehend and guard against the peril he was in, and this matter is ordinarily to be considered by the jury, in connection with the other circumstances of the case, and under proper instructions from the court. * * * We are of the opinion that the question of the alleged contributory negligence of the plaintiff was not a question of law for the court, but of fact for the jury, and that it was properly submitted."†

96. Honor *v.* Albrighton (93 Pa. 475), was another case of this character. A lad about thirteen years old was employed as a slate-picker in a coal-breaker. Another lad, who was attending the machinery, called to him to bring the oil can. He left his post and in taking the can fell into a pair of rollers and was severely injured. The rollers were covered with a box upon the top of which was an opening covered with a plank, which was displaced at the time of the accident, and often had been with the knowledge of the injured boy. It was held that the provision in the law of March 3, 1870, that all machinery where boys work shall be properly fenced off, evidently intended proper protection. "To protect the opening into which the plaintiff fell, a fence, in its literal sense, would not have been as efficient protection as the board used to cover the opening. In providing this cover the employer did his whole duty under the act. If that cover was unnecessarily removed without his fault or knowledge, through the negligence of one of the employes, no other servant could recover according to well settled principles. The conduct of the boy presented a case of contributory negligence. It was not the intention of the act of assembly to change these just and reasonable rules."

97. Another application of this rule of duty was made in the case of Iron-Ship Building Works *v.* Nuttall (119 Pa. 149). Nuttall was carrying wood to a man who was running a circular saw. He had carried thirty or forty pieces when a stick that was on the table became misplaced and struck him in the eye, putting it out. In reviewing the case, Mr. Justice Williams said: "There is no allegation that the sawyer was not a competent and careful man, nor that the circular saw was not of the pattern and quality in ordinary use, and at the time in good repair. The negligence which the plaintiff imputes to the defendant * * * is the failure to inform the plaintiff when he was sent to carry the lumber, that a circular saw was a dangerous machine, and the failure to provide the saw with an attachment called a

*Phila. City Pass R. Co. *v.* Hassard, 75 Pa. 367; Crissey *v.* Hestonville, etc., Pass. R. Co., 75 Pa. 83. See Miller *v.* Railroad Co, 2 Pa. Sup. Ct. Dig. 57, cited in 128 Pa. 205.

†See Kaiser *v.* Flaccus, 138 Pa. 332.

'spreader.' As to the first of these it must be remembered that the work Nuttall was asked to do was simply that of a bearer of burdens; work which is done by cheap and unskilled labor. He was a mechanic and had for weeks been working in the same room in which this saw was operated. All that could have been told him by way of warning was, that there was a possibility of injury from a flying stick, but that during many years no such accident had happened in the defendant's works. That the omission of such a warning to a mechanic under the circumstances of this case, was a failure in duty on the part of the employer is simply preposterous. * * * As to the failure to provide a 'spreader,' the case of the plaintiff is, if possible, more clearly without merit. The testimony shows that such an attachment is not in general use and that there is no general agreement among mill owners or practical sawyers that it is a desirable or useful attachment. It is not enough that some persons regard it as a valuable safeguard. The test is general use. Tried by this test the saw of the defendant is such an one as the company had a right to use, because it is such as is commonly used by mill owners, and it was error to leave to the jury any question of negligence based on the failure to provide a 'spreader.'" A similar case in some respects is Hahn *v.* Smith (6 Pa. Co. Ct. Rep. 207). An employe's eye was injured while removing a steel die from a soft iron bed by a piece of steel, which came from the hammer or the die. The employer was declared to be not liable, though he gave the employe no warning, and though by putting a piece of soft steel between the die and the hammer, which was sometimes done, the injury might have been avoided.

98. In Zurn *v.* Tetlow (134 Pa. 213), the person injured was about fourteen years old. He was employed as a "creeler," and his duties consisted in wiping the "fly" or waste off the roller beam of a "mule" or "jenny." This employment was not dangerous, and previous to undertaking his duties he had received all necessary instructions. When the time came to "wipe down," the "creeler" would signal the spinner, who would throw off the belt and stop the "mule," but the "creelers" were in the habit of wiping the beam when the "mule" was in motion. About a week after the plaintiff went into the mill, when cleaning the roller-beam with his hands, while the "mule" was in motion, his arm was caught by the center-band and badly fractured and mangled. At the close of the plaintiff's case the defendant moved for a nonsuit, which was granted.

99. When a latent defect or danger exists, so Mr. Justice Green has remarked, the essential fact of its existence must necessarily be clearly established before any charge of negligence in that respect can be sustained (Melchert *v.* Smith Brewing Co., 140 Pa. 448, 456). In the case giving rise to this remark the judge directed the jury to find a verdict for the company.

100. Notwithstanding the rule of duty that we have described concerning the selection of workmen, tools, machinery, safe places for working and the like, much discretion must be left to the workman himself, for the exercise of which the employer is not responsible. Mr. Justice Williams has well expressed the law on the subject (Ross *v.* Walker, 139 Pa. 42, 49): "The master does not insure his employes against each other, nor is he bound to supervise and direct every detail of their labor. They must exercise their own senses in the selection of material out of the mass provided for them; they must use their own judgments as to the manner of handling it; as to the sufficiency and stability of the scaffolding they erect for themselves, and the amount of burden to be put upon such structures. No employer could bear the burden of legal responsibility for every blunder or neglect on the part of each and all of his employes. The fact that one employe is more skilful than another, or has had greater experience, and is so deferred to by others, does not change his relation to his employer or to his fellows. Nor does a difference in rank or grade of service change the rule." So, too, when alterations in a building are in progress the employes must exercise greater caution than at other times. Says Mr. Justice Paxson in Wannamaker *v.* Burke (111 Pa. 423, 430), "It would be unreasonable to hold them to the same degree of strictness during alterations to the building as might be required after such alterations were completed. The fact that alterations were being made in the presence of the employes was notice to them of the possibility of danger of some sort, and of the necessity of exercising greater caution."

101. In seeking to recover on the ground of his employer's negligence an employe must prove his case.* He must show that his injury was caused exclusively by the negligence of his employer, though the measure of care which he himself must exercise may shift with circumstances, or be varied by his employer's conduct. An illustration of this rule is Shumpp's Case, which will be hereafter described (§ 110). In such a case the jury alone can determine whether the employe has been guilty of contributory negligence. The fact of the injury does not raise a presumption of negligence, as in the case of a passenger (Phila. & Reading R. Co. *v.* Hughes, 119 Pa. 301, 312). In Erie & Wyoming Valley R. Co. *v.* Smith (125 Pa. 259, 267), Mr. Justice Green remarked: "Had the fireman, [who was the person injured],

*In Pittston Coal Co. *v.* McNulty, 120 Pa. 414, 424, Clark, J., said: "The action is by an employe against his employer; the gist of the action is negligence, and the burden of proof rests upon the plaintiff to prove that the negligence of the defendant was the proximate cause of the injury."—Pennsylvania & N. Y. Canal R. Co. *v.* Mason, 109 Pa. 296. In an action charging negligence in employing a servant, Mr. Justice Paxson has said: "It is not enough for the plaintiffs to show that his work was unskillfully done or that he was incompetent. It must appear that the defendants were guilty of negligence in selecting him; that they either knew he was incompetent or with proper diligence might and ought to have known it."—Mansfield Coal & Coke Co. *v.* McEnery, 91 Pa. 185, 191; Drew. *v.* Gaylord Coal Co., 4 At. Rep. 214. See §§ 173–190.

been a passenger he would have had the benefit of a presumption of negligence which it would have been the duty of the company to rebut. But with an employe there is no such presumption, and he must prove affirmatively the fact of negligence, and that it is such a kind of negligence as violates the special and limited duty of an employer to an employe." In Frazier *v.* Lloyd (16 At. Rep. 418), an employe was injured by a board which was thrown back from a circular saw which was operated by one of the defendants. How the board thus came to move was not shown. Mr. Justice Sterrett, who reviewed the case, said: "From an examination of the evidence before us, we are constrained to say there is nothing in it that would warrant the jury in finding that the defendant, George Frazier, who was operating the saw at the time, was guilty of negligence. The implied finding of negligence by the jury must have been, at least, a mere guess, and not a legitimate inference from any of the facts in evidence. In short, as to the first-mentioned essential to recovery, there was an entire failure of proof, and the jury should have been directed to find for the defendants. It is error to submit a question of fact without sufficient evidence. In the absence of evidence that would warrant the jury in finding negligence of defendants that caused the injury, no question can, of course, arise as to contributory negligence." Furthermore, in the absence of contrary proof the presumption is that machinery is suitable for the purpose for which it is used, and with reasonable care can be operated by an employe without danger. This is all the law imposes upon an employer (Grimont *v.* Hartman, 6 East. Rep. 15). To recover on this ground the employe must show that the machinery was defectively constructed or out of repair (Id.). Again, "it is only for negligence of the company itself, endangering his safety, he can complain, and not that of his fellow employes" (Sup. Ct. Orrison *v.* Pennsylvania Co., 24 Pittsburgh L. Jour. 37).

102. In proving the negligence of an employe only evidence of general reputation will be admitted, and not evidence of special acts. Thus in the Frazier Case (Frazier *v.* Pennsylvania R. Co., 38 Pa. 104), an employe of the company was injured when at his work through the negligence of the conductor of a train, while riding in one of the cars. The company was regarded not liable for reasons that have been already given (§ 8). In proving the unskilfulness of the conductor the court decided that "character for care, skill and truth of witnesses, parties or others must, all alike, be proved by evidence of general reputation and not of special acts. * * * Character grows out of special acts, but is not proved by them. Indeed, special acts do often indicate frailties or vices that are altogether contrary to the character actually established. And sometimes the very frailties that may be proved against a man, may have been regarded by him in so serious a light as to have produced great improvement of character.

Besides this, ordinary care implies occasional acts of carelessness, for all men are fallible in this respect, and the law demands only the ordinary." The court, therefore, adhered to the rule in deciding that when a conductor is shown to be habitually intoxicated it raises a presumption of negligence whenever an accident occurs (Huntingdon & B. T. M. R. & Co. *v.* Decker, 82 Pa. 119; Pennsylvania R. Co. *v.* Books, 57 Pa. 339).

103. In Melchert *v.* Smith Brewing Co. (140 Pa. 448, 453), it was decided that when an injury happened to a workman in the course of his employment no presumption of negligence was thereby raised on the part of the employer. The employe can recover only by proving that the injury was produced by the employer's negligence. Said Mr. Justice Green, the plaintiff "can only recover upon making affirmative proof of such culpable negligence of the defendant in producing the injury as in law imposed liability on the employer. The mere fact of the injury raises no presumption of negligence in such cases." When the work and place are not dangerous, and the materials are those in common use, the employer is not liable to the employe for an injury arising from an accident on the ground that it was his duty to give previous instruction and warning.*

104. In Pittston Coal Co. *v.* McNulty (120 Pa. 414), the injured employe was a lad of twelve or thirteen years of age, who was employed to oil the machinery in the breaker. On the day of his injury he was temporarily sent into the mines to act as a driver, his duty consisting in hitching a mule to loaded cars at the heading, and then to drive him a mile or more to the main or loaded track. Here the mule was detached from the car and hitched to an empty one, which was hauled over the same route to the heading. McNulty was delivering his sixth car on the loaded track; as he approached the point where the boy was to unhitch, he stopped the mule and attempted to detach the stretcher, a device used in hitching the mule to the car. But the mule "started out again," the stretcher struck the boy on the breast, threw him on the track in front of the car and the front wheel injured him. The car stopped and the mule stood still, while the boy by the aid of others was extricated. The contention was that the mule was unsafe and unsuitable for the purpose for which he was used; that he was a vicious and intractable animal, would bite, kick and run away; that his vicious habits were well known to the company and that the company was negligent in permitting him to be used in the mine, and that the company was bound to furnish the boy with a mule that was reasonably safe; that the boy accepted only the ordinary risks of the business, and that he was wholly ignorant of the vicious character of the animal he had in charge. "Assuming all this to be so," said the court, "the difficulty in the plaintiff's case is

* Allison Mfg. Co. *v.* McCormick, 118 Pa. 519; Gillen *v.* Rowley, 134 Pa. 209; Zurn *v.* Titlow, 134 Pa. 213. See Rummell *v.* Dilworth, 131 Pa. 509.

that the injury does not appear to have occurred from any vicious habit or conduct of the mule. * * * The action is by an employe against his employer; the gist of the action is negligence, and the burden of proof rests upon the plaintiff to prove that the negligence of the defendant was the proximate cause of the injury. Upon an examination of the whole case, we fail to find the slightest evidence that the injury complained of resulted from any vicious habit or conduct of this mule. We are not to assume that when he 'started out again' he started to run away; the testimony is wholly to the contrary."

105. We have completed our review of the cases defining the duty of the employer to select servants, tools and other apparatus, materials, and places for work; of railroad companies to maintain roadways and to establish regulations for the running of their trains, and also of employers to give instructions to the young or inexperienced. This rule of duty, however, has been greatly impaired by several important modifications, which will next be considered.

106. The first of these is, if a person accepts employment knowing that the machine which he is to operate is dangerous, he cannot recover for an injury that may happen to him in operating it (Brossman *v.* Lehigh Valley R. Co., 113 Pa. 490, 498). The reason for the rule, so the courts have declared, is he assumes the risk. Says Mr. Justice Clark (Rummell *v.* Dilworth, 111 Pa. 343, 349): "A servant will be deemed to have assumed all risks naturally and reasonably incident to his employment, and to have notice of all risks, which to a person of his experience and understanding, are or ought to be open and obvious." And again the justice in the same case said: "If a person especially undertake to perform a peculiarly perilous work, by operating a machine obviously wanting in suitable appliances for safety, knowingly and voluntarily, he cannot afterwards complain in case of injury in consequence thereof, that the machinery was of a dangerous kind, and that it was wanting in appliances reasonably necessary to render it safe (Green & Coates St. Pass. R. Co. *v.* Bresmer, 97 Pa. 103; Marsden *v.* Haigh & Co., 14 W. N. Cas. 526). So, upon an analogous principle, if an employe after having a full and fair opportunity to become acquainted with the risk of his situation, makes no complaint whatever to his employer as to the machinery which he knows to be wanting in appliances for safety, takes no precaution to guard against danger, but, accepting the risks, voluntarily continues in the performance of his duties, he cannot complain if he is subsequently injured by such exposures." And Mr. Justice Williams also remarked, on the second trial of the case,* an employe "certainly has the right to expect his employer to provide machinery tools and appliances that are reasonably safe for his use and he assumes no risks growing out of their defective character, unless he has

* 131 Pa. 519.

been fully advised that they are defective and dangerous. He has the right to suppose that his employer has provided such guards and means of protection from injury in the use of the machinery, tools and appliances as are usual and reasonably necessary for his safety; and he cannot be held to assume the risks attendant on their absence unless such absence is apparent, or his attention has been called to it. If the business is one with which he is not familiar, he has a right to expect that its dangers will be pointed out to him, and that he will be be instructed in those things necessary for him to know in order to his own safety. He cannot be held to assume the risk of dangers of the existence of which he has no knowledge." The employe injured in the Rummell case was a boy who worked on a train of rollers in a spike mill. A few days after he was set at work, while fulfilling his duty, he was caught by the cogs of some wheels and drawn into them and hurt. A board protection extended along the rollers, but stopped short of the point at which the boy must stand to perform his work. Had the board extended three feet further he could have worked in safety. It was decided that there was sufficient evidence of negligence on the part of the employer and mill owner to require the submission of the case to the jury. And in the second trial it was decided that the danger from which he suffered was not a risk that he assumed when he accepted employment (see § 59 for full review of the case).

107. As a further exposition of the law the remarks of Mr. Justice Mercur may be repeated (Green & Coates St. Pass. R. Co. *v.* Bresmer, 97 Pa. 103, 106): "A servant assumes the risk naturally and reasonably incident to his employment. He is not bound to risk his safety in the service of his master, and may, if he thinks fit, decline any service in which he reasonably apprehends injury to himself. Inasmuch as the relation of master and servant cannot imply an obligation on the part of the master to take more care of the servant than he may reasonably be expected to take of himself, he cannot complain if he is injured by exposure, after having the opportunity of becoming acquainted with the risks of his employment, and accepts them."

108. In Bresmer's case he was injured by the kick of a mare belonging to his employer. The undoubted evidence showed, said Mr. Justice Mercur, who reviewed the case, "that Bresmer had full knowledge of her vicious habits. She had kicked others, and her reputation was well known to the persons employed in the stables, and they were warned to guard against being injured by her. * * * No duty was imposed on the company to inform him of what he so well knew, nor to forbid his grooming the mare. He voluntarily assumed the risk, and continued to expose himself to a well-known danger. He cannot now cast on his employer a liability for the injury which he thereby suffered. It matters not that the master did know the vicious habits of the mare. It is the knowledge of the servant which withholds from

him a right of actions." The case of Shaw *v.* Deal (25 W. N. Cas. 38) was of a similar character.

109. In Schwenk *v.* Kehler (122 Pa. 67), the plaintiff's son was injured while in the defendants' employ at their colliery. The negligence imputed to them was the failure to provide suitable appliances for hitching and unhitching mules used around the colliery. The appliances used were in the usual form and the plaintiff had knowledge of their character. The defendants contended that as no objection was made to them the plaintiff was guilty of contributory negligence and could not recover even if the appliances were unsuitable. In reviewing the case, Mr. Justice Williams said: "It was important that the jury should have their attention drawn distinctly to the sufficiency and suitableness of the method of unhitching the mules from the dump-cars in use at this colliery for the question of the negligence of the employer depended upon whether he had made reasonable provisions for the safety of his employes. But it was equally important that the attention of the jury should be drawn to the other question, whether if the employers were guilty of negligence the plaintiff was not chargeable with contributory negligence in permitting his son to continue in a dangerous employment, he having, as appeared from his own testimony, knowledge of the manner in which the the dumps were handled, and of the fact that his son was employed upon them."

110. In Woodward *v.* Shumpp (120 Pa. 458), the plaintiff while in the employ of the defendants assisted in shifting a car which was used in their business. He attached a horse to the west end of the car, while Mr. Bobb, one of the defendants, ascended to the roof and managed the brake. The car was thus moved westward to a point, when the brake was applied, the car stopped and Woodward was directed to move the horse and attach him to the east end of the car, which was to be moved eastward on another track. As the horse was about to be attached Mr. Bobb loosed the brake and the car started eastward. Woodward, still trying to attach the horse to the car, drove him eastward, trying with the right hand to attach the hook to the car-humper and holding the lines with his left hand. Going in this manner for fifty or sixty feet, calling several times to Mr. Bobb to stop the car, his left foot became fastened between a guard-rail and the north rail of the track. As the car continued in motion he tried to throw his body outside the track, but his foot remained fastened and his left leg was crushed between his ankle and knee. In reviewing the case, Mr. Justice Clark said: "When Shumpp placed himself in front of this car he did so by the direction of Bobb, his employer, and had no reason to suppose that the brake would be lifted until he had completed the connection with the car. Before this could be done, however, the car was set in motion, and he was obliged to regulate the movements of his horse, observe the approach of the car, watch his

opportunity to connect the hook with the car, and have regard for his own safety, all at one and the same time. He had committed himself and the horse to the space in front of the car on the track whilst the brakes were on and the car standing still; and it was the negligent act of Bobb which put the car in motion before Shumpp was prepared for it." Under these circumstances the verdict of the jury in Woodward's favor was affirmed.

111. In Hughes' Case (Phila. & Reading R. Co. *v.* Hughes, 119 Pa. 301, 313), the employe was injured by a defective brake, which became either broken or detached by the removal or breaking of a lever-pin, in consequence of which the brake became disjoined underneath the car, and the plaintiff was thrown from the car upon the road-bed. The car belonged to the Mine Hill Branch railroad. In reviewing the case, Mr. Justice Clark said: "It is conceded that the brakes upon all the Mine Hill cars were of the kind which caused the injury; that the difference in their construction from others in use was open and obvious; that Hughes had been a brakeman on these cars for three years and upwards, and that if the operation of this brake was peculiarly perilous, he knew, or by reason of his long experience ought to have known, the fact. He admits that he made no complaint whatever, and that he continued in the company's service; the inference is irresistible, therefore, that he accepted the risks incident to this particular employment. He was not bound to risk his safety in the service of the company, and if he knew the brakes to be wanting in any appliance which would be a precaution against danger, it was his duty to decline to operate them. Having undertaken the performance of duties he knew to be hazardous, he assumed the risks incident to their discharge. In this view of the case, the peculiar construction of the brakes was a matter of little importance; the main question of difficulty arises out of the fact that when Hughes stepped upon the brake, the iron pin which passed through the fork at the lower end and formed the fulcrum of the lever which held the brake block in place, either broke or dropped out, and Hughes fell to the ground and under the wheels. This pin was ordinarily kept in place by a key, but as neither the pin nor the key was afterwards found, it is impossible to state from what cause the accident occurred, whether the pin was broken, or whether it fell out from some defect or displacement of the key."

112. In Brossman *v.* Lehigh Valley R. Co. (113 Pa. 490), the plaintiff had been serving the company as a brakeman for more than two months when he was killed while the train was passing under a low bridge. He made one round trip daily, and his duties required him to be on top of a box car. There were several bridges over the road so low that a man could not stand erect on such a car as it passed under them without striking, and the bridge where the accident

occurred was about four feet above the top of the cars. Brossman knew of these bridges, including the one that threw him from the car, for he had passed under them daily, when on duty, from the date of his employment. In reviewing the case, Mr. Justice Trunkey, speaking for the supreme court, said: "Where a railroad company negligently plans an obstruction over its roadway, dangerous to the lives of its employes, it fails in its duty to them, and therefore if a person enters the service of the company, in ignorance of such danger, and remains ignorant thereof until injured or killed by it, the company is liable for damages. But if the employe had knowledge of the nature and degree of the peril when he entered the service, or continued in the service after such knowledge without protest and promise of amendment, the case is different. The employer has no right to subject his employe to an unnecessary peril without his consent; but it is well settled in the courts of this country and in England, that if a servant chooses to enter into an employment involving danger of personal injury which the master might have avoided, he takes upon himself the risk of all the hazards incident to the employment, the existence and nature of which were known to him when he entered the service, and which he had no reason to expect would be obviated or removed. If a servant accepts service with a knowledge of the position of structures from which he has occasion to be apprehensive of injury, he cannot require the master to make changes so as to obviate the danger, or hold him liable for damages in case of injury (Clark *v.* St. Paul & Sioux City R. Co., 28 Minn. 128). By continuing in the master's service after being fully apprised of its dangerous character, the servant takes upon himself all risks incident to such service" (Umback *v.* Lake Shore & Mich. So. R. Co., 8 Am. & Eng. R. Cases 98). As Brossman did know of the low bridges over the road no recovery could be had against the company.*

113. Thus a serious rent has been made in the rule of the employer s duty. If an employe undertakes an employment knowing that the machine he is to operate is unsafe, dangerous or hazardous, he assumes the risk, and if he is afterwards injured in consequence of its defective condition he cannot recover The reasoning of the court is glib enough, either that the person desiring employment need not undertake the service, or if he does, that he assumes the risks and often receives a higher compensation when the risk is unusual. But these assumptions are the imagination of the courts. They were unknown by the workingmen until they were informed by the bench. Their conduct in bringing suits to recover for their injuries is a complete denial of them. If inquiry had ever been made of them their answer would have been not less decisive. Let us then, in dealing with this question, remember first of all that the risks which the courts have

*See Stoneback *v.* Thomas Iron Co., 6 East. Rep. 835.

declared the workingmen assume when they undertake employment, are pure creations. They are judicial, not actual assumptions. The workingmen do not assume them, and consquently would recover for the injuries received when thus employed if they could. They do not succeed, not because they assume such risks, but because recovery is denied to them. Permit them to recover if they desired, and the courts would speedily learn whether they would decline to recover on the ground that they had assumed the risks and therefore had no just standing in the courts. This reasoning is purely fanciful, and if none sounder existed employers could have hardly held their ground so long in preventing a recovery in such cases. But a much better reason has been given for denying relief, which was long ago stated by Mr. Chief Justice Shaw in the Farwell case and afterwards by Mr. Justice Lowrie, and has been already stated.

114. And there is also another reason which will be more willingly accepted by all reasonable persons. To hold an employer responsible to an employe for the negligence of another would tend to increase it, which is the very end the law should seek to prevent. Though the law, wisely as we think, does not regard an employer responsible to an employe for the negligence of another, it should regard him responsible to an employe for his own negligence; nor should he be permitted to escape from this responsibility. If he is knowingly employing unsuitable servants and machinery, he should be held responsible for the consequences, regardless of the employe's knowledge of these things. His willingness to risk his health and life ought not to serve as an excuse for his employer's negligence. Consider the very extraordinary position into which some of the courts have fallen. They declare that if an employer retains an unsuitable servant or uses an unsafe machine he is negligent. A person is employed who is willing to work with the servant, or to operate the machine. Is the servant less suitable, or the machine less defective because another is willing to work under these conditions? And as the employer's negligence continues, why should he not be held responsible for what happens? Why should he be permitted to escape from the consequences of his negligence to his servants when the law will in no wise permit him to escape from the consequences of his negligence if it affects a passenger, or even the transportation of goods? Why should the life and health of an employe be regarded as of less consequence even than the transportation of a bale of cotton?

115. The courts say, if the employe fears evil consequences should he accept a given employemnt, he ought to decline to serve. While he possesses the legal liberty to accept or decline employment, his daily wants practically settle the question for him; and the freedom which he would otherwise exercise, does not, except in a narrow degree, exist. He must accept the situation in order to live. His em-

ployer, knowing this, cares less to maintain or protect his machinery from danger to his employes. It is true that every energetic and intelligent employer is constantly seeking to introduce improved machinery and the like, but as we have already remarked, new and improved machinery is often no safer to operate than the old. Therefore, so long as this rule of duty exists and the employer is exempted from liability for using machinery which his employes voluntarily consent to operate, knowing its condition, there is no incentive to improve its safety. Ought not the rule of duty to be changed, and the employer be held liable for operating machinery whenever he knows that it is defective or dangerous to human health or life? Surely, if the rule is not changed in this regard, we are likely to have defective and dangerous machinery operated for an indefinite period. The rule must be changed if an improvement is to come. The law cannot wisely leave the change to be effected by the action of the employe in declining employment whenever machinery of this character is found and its operation is desired. If the employe was placed in such an independent position that he could readily accept or decline employment, if competition for his services were great; if there was much machinery to operate and a dearth of operators, then indeed he might be in a position to decline the operation of unsafe machinery, and by so doing compel employers to make improvements. But this is not the case; employers command the situation, the employe is quite powerless to gain equally favorable ground and therefore the law must be changed if ever an improvement is made. The law must make employers responsible for their negligence in retaining servants whom they know are unsuitable, and for operating machinery which they know is unsafe and then they will make the needful changes and improvements; but if the law does not render them thus responsible and leave the desired changes to be effected by the workingman by simply declining to serve, we fear that they will be made as slowly in the future as they have been in the past. Instead of pointing out a weak remedy for employes to apply to correct the negligent conduct of their employers, the law should apply its own remedy and hold them responsible for the consequences of their direct negligence.

116. Having taken the first step to narrow the employer's duty, the courts have easily taken another. Accordingly, they have declared that if tools, machinery or other apparatus become defective or dangerous while the workman is using them, and notwithstanding he continues in his employment, he cannot recover for injuries that may happen to him whether he has notified his employer of their defective condition or not. This qualification of the employer's duty was early announced in the Frazier case (Frazier *v.* Pennsylvania R. Co., 38 Pa. 104, 111). On that occasion an employe was injured through the negligence of a conductor. The court, speaking through Mr. Chief

Justice Lowrie, said: "If the plaintiff knew that his conductor was habitually careless, and chose to continue in service with him, and did not inform the company of his known acts of carelessness and refuse to serve with him, he can have no claim against the company from injuries suffered from further carelessness, even if the company did also know. The court below was in error in refusing to give this instruction to the jury." On another occasion, Mr. Justice Clark said: "If an employe, after having a full and fair opportunity to become acquainted with the risk of his situation, makes no complaint whatever to his employer as to the machinery which he knows to be wanting in appliances for safety, takes no precaution to guard against danger, but accepting the risks voluntarily continues in the performance of his duties, he cannot complain if he is subsequently injured by such exposure."*

117. This second modification of the rule of the employer's duty was applied in Schwenk *v.* Kehler (122 Pa. 67, 77). The plaintiff sought to recover for an injury to his son which was caused by an unsuitable appliance for hitching and unhitching the mules employed in the defendant's colliery to draw their dump cars. One of the defenses was that the plaintiff was guilty of contributory negligence in permitting his son to work there after he knew of the nature of the appliance. "It was equally important," said Mr. Justice Williams, in reviewing the case, "that the attention of the jury should be drawn to the other question, whether if the employers were guilty of negligence the plaintiff was not chargeable with contributory negligence in permitting his son to continue in a dangerous employment, he having, as appeared from his own testimony, knowledge of the manner in which the dumps were handled, and of the fact that his son was employed upon them."

118. In the case of Mansfield Coal & Coke Co. *v.* McEnery (91 Pa. 185, 194), Mr. Justice Paxson said: "It has been repeatedly held, in fact there is no conflict of authority upon this question that where an employe has knowledge of machinery being defective and dangerous, and in the course of his employment continues to use it, without notifying his employer of such defect and asking him to repair, he voluntarily accepts the risk, and cannot, in case of injury from such cause, recover."† In commenting on this question the same justice has remarked in a recent case (New York, L. E. & W. R. Co. *v.* Lyons, 119 Pa. 324, 336): "The above rule is not only settled law, but is founded on justice and good sense. In a large majority of cases employes are better informed than their employers as to the safety of machinery in use by them, as they have far better means of information. Where

*Rummell *v.* Dilworth, 111 Pa. 343, 349. Barkdoll *v.* Pennsylvania R. Co., 13 At. Rep. 82.

† Wanamaker *v.* Burke, 111 Pa. 423, 430; Brownfield *v.* Hughes, 128 Pa. 194, 199.

a person employing a large number of men engaged in a particular work, has provided machinery, tools, etc., suitable for their occupation, and the same become unfit for use or dangerous from wear or other cause, and they continue to use them without notice to their employer of such defects, it would be a hard rule to hold him responsible. I am not now speaking of hidden defects or dangers which the employe cannot see and know, but of such open and palpable defects as existed in the case of the bridge in the Mansfield Coal Co. case, and of the step in the case in hand. Under such circumstances to refer such a point to the jury is to fritter the rule away and allow it to be overridden in every case. A just administration of the law will not allow this to be done." In the McEnery case an attempt was made to recover for the loss of a life occasioned by the fall of a bridge when passing over it. It had been unsafe for several months, and during that period the deceased had passed over it repeatedly, and must have known of its condition. He did not, however, notify the company, but continued in its employ. He was, therefore, regarded as guilty of contributory negligence and by his own act prevented a recovery. In the Lyons case (New York, L. E. & W. R. Co. *v.* Lyons, 119 Pa. 324, 336), it was decided that a flagman who had received injuries from the existence of a defective step when attempting to board an engine, knowing the condition of the step and the difficulty of getting upon it when the engine was in motion, in the night time, incumbered with two lanterns, and knowing also that he had the right and power to bring the engine to a stop, was guilty of contributory negligence and could not recover.

119. This modification of the employer's rule of duty, however, has been somewhat lessened. If, says Mr. Justice Gordon (Patterson *v.* Pittsburgh & Connellsville R. Co., 76 Pa. 389, 394), "a servant, in obedience to the requirement of the master, incurs the risk of machinery, which, though dangerous, is not so much so as to threaten immediate injury, or where it is reasonably probable it may be safely used by extraordinary caution or skill, the rule is different. In such case the master is liable for a resulting accident. * * * In this discussion, however, we are not to forget that the servant is required to exercise ordinary prudence. If the instrumentality by which he is required to perform his service is so obviously and immediately dangerous that a man of common prudence would refuse to use it, the master cannot be held liable for the resulting damage."*

120. This, then, is the singular condition into which the courts have put themselves. If an employe discovers that the machine which he is operating is defective and dangerous he must notify his employer of his discovery, and if he does not he is declared negligent;

* Brownfield *v.* Hughes, 128 Pa. 194, 199. See also Oak Ridge Coal Co. *v.* Reed, 5 W. N. Cas. 3.

but if he does give the required notice, and afterwards suffers from operating it he can recover nothing, because, forsooth, he is deemed negligent in continuing at his post and thus contributed to the accident.

121. Ought not the employer to be regarded as negligent whenever he knowingly keeps his unsafe machinery in operation? He is in fact negligent while keeping machinery in operation, knowing that it is unsafe. If so, ought he not to be held liable for the consequences? Why should the employe's knowledge of its defectiveness operate to condone his employer's act? If he received higher wages for assuming the larger risk, the increase might be regarded as a recompense for undertaking it; but in truth they are not paid, though the courts sometimes have erroneously assumed they are. Why then should the employer's conduct whenever it is branded by the law as negligence, be regarded as condoned simply by the employe's knowledge of the negligence? This modification is, therefore, wholly one-sided; is wholly favorable to the employer, and the undoubted effect of it is to retard the improvement of machinery, because the employer's risk is so very small in continuing to operate his machinery in its present condition, however defective it may be (see § 128).

122. Furthermore, the exemption of the employer from the consequences of his direct negligence is utterly opposed to the entire spirit of the law. It is believed that this is the only exemption from the consequences of one's negligence which the law has ever sanctioned. A common carrier is responsible, not only for his own direct negligence, but also for the indirect negligence of his servants. Whether the courts have acted wisely or not in thus holding a carrier liable for both his direct and indirect negligence, certainly the requirement is universal in our country. But if the law will not permit him to escape from the consequences even of his indirect negligence in the carrying of merchandise, are not the reasons much stronger for holding him liable for the consequences of his own direct negligence? When Mr. Justice Lowrie remarked, in the Ryan Case (23 Pa. 384, 388), that if the law had declared in the beginning that an employer was liable for the negligent acts of his employe he might have relieved himself by special contract, he declared there was no particular reason why an employer should be held liable for the negligence of another; but this is very different from saying that he should not be held liable for his own negligence. Clearly, his language does not imply that an employer could or should be relieved from liability for the consequences of his negligent conduct: he simply intimated that an employer could relieve himself from liability to one of his employes, by special contract, for the negligence of another. But the courts, as we have seen in making the exemptions already described, have relieved employers from the consequences of providing unsuitable tools, machinery, ma-

terials, etc. Shippers of freight were quite willing to make special contracts exempting carriers from negligence in consideration of having their freight carried at a lower rate, but the courts declared it was contrary to public policy to uphold such contracts. But if an employer fails to observe his duty to provide competent servants, etc., and his employés know of his direct personal negligence their knowledge of his non-observance of his duty prevents a recovery for the injurious consequences.

123. It may be contended that this rule of liability, both for direct and indirect negligence, which has been imposed on carriers, ought not to be applied to them or others as employers, because the public necessity or interest does not require such an extension or maintenance of the rule. Does not as potent reason exist for an application of the rule to employes as to shippers? Does any one imagine that the public with which the carrier deals comprises a larger number of persons, and therefore such a rule of liability may be properly imposed on him? Surely the shipping public is by no means so large as the number of employes, therefore, a justification founded on the argument of numbers must utterly fail.

124. Finally, the enforcement of the rule of duty, requiring employers to select suitable employes and to replace them whenever their incompetency has been discovered, and to select and maintain suitable machinery, etc., would bring no serious consequences to all the largest and best managed industrial organizations in the state. From a somewhat extensive inquiry we have learned that they endeavor to employ suitable servants and machinery and when mistakes and defects in these regards are discovered, seek to correct them at the earliest moment. They have neither the disposition nor intention to subject their employes to unusual risks. One of the proofs of this is the very small number of reported cases of this nature against such employers. The violation of the rules is generally by those who are less prosperous, whose capital and credit are less extensive, and who continue to use their machinery though knowing it is defective and perhaps unsafe, and who employ unsuitable and cheaper labor, though knowing of the danger of accidents and loss to life and property, to lessen the cost of production.

125. We would emphasize the duty of the employe to give notice of defects, for his employers, especialy when inspectors are not appointed for that purpose, must depend on him for such knowledge. Mr. Justice Clark has well expressed this duty, that "if any defect in the tools or machinery placed in his hands becomes apparent in their use, it is the duty of the servant to observe and report to his employers, for the servant has means of discovering defects which the master may not possess" (Phila. & Reading R. Co. *v.* Hughes, 119 Pa. 301, 314). This is a reasonable request, and should be faithfully

observed. We would shield no servant who neglects to comply with a request so obviously proper. But when the employe has observed it, and reports defects in machinery and unsuitableness in servants for their employment, he can do no more; he has no authority to make repairs and changes. If the employer disregards the knowledge communicated to him, the employe may decline to serve longer.

126. We have now described the duty of the employer to provide suitable employes, tools apparatus, etc., and the consequence of his neglect to do these things. We have also shown, however, that if a person accepts employment knowing that his fellow employes are unfit, or that the tools and apparatus that he is to operate are unsafe, hazardous or dangerous, or, afterwards discovering these things, continues in his employment, whether notifying his employer of them or not, he cannot recover if he is injured by the conduct of such fellow employes, or from the operation of such machinery. All that is left of the rule is this, if the employer learning of the defects, either through his employe or in other ways, promises to select other employes or to repair the defective machinery and does not, then he is liable for the injuries in consequence of using it. The rule is thus stated by Mr. Justice Sterrett (Brownfield *v.* Hughes, 128 Pa. 194, 199): "As a general rule it is true that an employe who continues to use a machine which he knows to be dangerous takes upon himself the risk of any accident that may result therefrom; but that principle has its qualifications, one of which is, that if the employe in pursuance of the promise of his employer to remedy the defect, and the risk be not such as to threaten immediate danger, continue in his employment and be injured, without fault on his part, the employer may be liable."

127. In illustrating the operation of this rule the following case may be described: In an action against a railroad company the plaintiff offered to prove that he was a conductor of a freight train and that the company had a siding on which coal cars were to be run. It was his duty to run on the siding the coal cars brought by his train. By reason of the shortness of the curve of the siding and its improper connection with the main road it was dangerous to run the cars on the siding, and he had notified the superintendent and foreman of the company of the danger. They promised to repair the road and requested the conductor to continue until the repair was made. Nothing, however, was done and while the conductor was running his train on the siding, using due care, the front car ran off the track, and the conductor was injured. The court below rejected the offer, but the supreme court decided that it should have been received. In reviewing the case Mr. Justice Gordon said: "He proposes to prove that he notified the superintendent and foreman of the dangerous character of the switch in question. It is objected, however, that this would not be sufficient, because notice to a subordinate, how-

ever extensive his authority, is, after all, but notice to a fellow servant, and therefore not binding upon the master. In ordinary cases such is undoubtely the rule, but its strict application, in the case of corporations, such as the defendant, representing a multitude of shareholders, is impracticable. Hence we approve of the doctrine announced in the case of Frazier *v.* Pennsylvania R. Co., already referred to, that it is not the company, but the officer to whose care is committed this particular department of its business, who is expected to use ordinary care in the conduct thereof, and whose negligence herein is the negligence of the company. It is apparent from this authority that the proper person to notify of the defect complained of in the case in hand was the superintendent of the defendant's works. As his powers were plenary he could readily have applied the necessary remedy, and if he neglected so to do his default was the default of the company" (Patterson *v.* Pittsburgh & Connellsville R. Co. 76 Pa. 389, 394).

128. We cannot pass from this topic without remarking on the singular construction of the rule requiring the employe to give notice of the defects, unsuitable servants, etc., and the lameness of the consequence of complying with the requirement. Nothing can be recovered if he neglects to give such notice; but suppose he does, what then? Is the employer held liable for the consequences? By no means. If he promises to remedy the defects and does not, then he is responsible; but if he remains silent his responsibility is not increased a whit. As this is the law one can easily imagine what an employer's conduct is likely to be when the gain from remaining silent is so great. Surely, from the ordinary business point of view he should not utter a word, for then his liability would not in the least be increased by the intelligence conveyed to him. If the employe should cease to work, of course, he would not be injured and therefore the employer would incur no liability; but if he continues to work, then he is regarded as assuming the increased risk, and consequently if the employer does not promise to make repairs he wholly escapes. Such seems to be the narrow point to which the employer's rule of duty has been reduced. The courts have been diligently cutting away at both the branches and the roots of the employer's rule of duty until hardly anything remains. The rule has been nearly killed by successive modifications; if the courts should make short work of it by abolishing it altogether, it would be difficult to show wherein the practical defenselessness of employes would be much increased (see § 120).

129. Finally, an employe cannot recover if he is injured by a contrivance of his own making. In Hart *v.* H. C. Frick Coke Co. (131 Pa. 125), it is held that an employe cannot recover for an injury received when using a dangerous appliance if it is one of his own contrivance and constructed at his own suggestion, and there is no proof of defect

in the construction or of negligence on the part of the employer regarding it. And again he cannot recover in the absence of proof that he suggested and contrived the appliance, when the danger of using it was patent and known to him, and he might have used another arrangement provided for him, which was more safe, though not perhaps so convenient.

130. In Keystone Bridge Co. *v.* Newberry (96 Pa. 246, 252), the plaintiff was injured by the breaking or giving way of a defective apparatus, which was made by the foreman and two of the workmen. No superior officer of the company gave orders that the particular materials used should be selected, or that the contrivance itself should be constructed. Said the court: "The workmen made such an apparatus as they deemed sufficient. If it proved insufficient it was an error of judgment on their part for which we can see no ground of liability as against the defendant for the injuries of the plaintiffs."

131. In like manner an employer is not liable for an injury happening to an employe while rendering a voluntary service, though without carelessness or breach of duty. In the Sentmeyer case (Pittsburgh & Connellsville R. Co. *v.* Sentmeyer, 92 Pa. 276), a brakeman was knocked off the top of a car while it was passing under a bridge and was killed. No duty required him to thus expose himself; his act was voluntary. Mr. Justice Gordon said: "The defendant was liable for the consequences of such dangers as it subjected the employe to, and not for those to which he subjected himself. He was the flagman of the preceding train, and his only duty on the train from which he was killed, was to ride upon it until he overtook his own train. His business was simply to take care of himself, and the whole duty of the company was discharged by affording him a safe place to ride. On that train there were two such places, the caboose and the locomotive; he might have taken either and been perfectly safe; he took neither, but chose the top of the cars, the place of all others the most unsafe. No duty to the company called him to this position; he chose it of his own free will; he put himself in the place of danger and the direct consequence of this, his own voluntary act, was the loss of his life. For this, surely, the company was not liable, for it required of him no such risk. It furnished him with a safe conveyance, all it was at that time bound to do, and if he chose to turn that safe conveyance into one of danger it was no fault of the company."

132. In another case (Gillen *v.* Rowley, 134 Pa. 209), the employe, a boy of thirteen, was injured while voluntarily interfering with a machine in the exclusive charge of another employe and undertaking to do something not within the scope of his employment. The court said: "The plaintiff's own version of the transaction shows he was not injured in doing, or attempting to do, anything properly within the scope of his employment. He testified in substance, that defend-

ant's foreman assigned him to work at one of the trimming machines operated by a boy about his own size; that he was directed to lift the unfinished tin caps from the floor, and place them in a box where they could be conveniently reached by the operator and placed in the machine. There is no evidence that he was either directed or expected to participate in the operation of the machine, and hence no instructions were given him in relation thereto. After attending for some time to the work assigned to him, he says, 'Something stopped the machine and the other boy ran away. I thought it was my place to take the thing out, so I put my hand in to pull the cap out after the boy jumped off the machine; and the machine started up and caught my hand.' While plaintiff's motive in thus interfering with the machine which the operator had left was doubtless commendable, he undertook to do something that was not within the scope of the work to which he says he was assigned, and which, up to that point of time, he appears to have performed without any difficulty. That work was neither difficult nor dangerous, and if he had not voluntarily undertaken to interfere with the machine, which appears to have been in the exculsive charge of the operator, he would not have suffered the much-to-be-regretted injury. There was, therefore, no error in holding, as the learned trial judge did, that plaintiff 'was injured outside of his employment, not in it.' We find nothing in the evidence that would have warranted the jury in finding that the injury complained of resulted from negligence of the defendants."*

133. In Flower *v.* Pennsylvania R. Co. (69 Pa. 210), a locomotive was at a water station and the fireman asked a boy ten years old, who stood there, to turn on the water. When climbing on the tender to put on the hose, the remainder of the train came down with the ordinary force and struck the car attached to the engine; the jar threw the boy under the wheels and he was killed. The company was declared to be not liable. Mr. Justice Agnew, in delivering the opinion, said: "The true point of this case is that in climbing the side of the tender, or engine, at the request of the fireman, to perform the fireman's duty, the son of the plaintiffs did not come within the protection of the company. To recover, the company must have come under a duty to him which made his protection necessary. Viewing him as an employe at the request of the fireman, the relation itself would destroy his right of action.† Had the fireman himself fallen in place of the boy, he could have had no remedy. It does not seem to be reasonable that his reqest to the boy to take his place, without any authority, general or special, can elevate the boy to a higher position than his own, and

*See Cumberland Valley R. Co. *v.* Myers, 55 Pa. 288. In Rummell *v.* Dilworth, 111 Id. 343, 348, it was contended that the person injured was a volunteer, but the court decided this contention negatively.

† Caldwell *v.* Brown, 53 Pa. 453; Weger *v.* Pennsylvania R. Co., 55 Pa. 460; Cumberland Valley R. Co. *v.* Myers, 55 Pa. 288.

create a liability where none would attach had he performed the service himself."

134. In Wischam *v.* Rickards (136 Pa: 109), the liabilty of an employer for the act of a volunteer was fully considered by Mr. Justice Green. Several important principles were declared, one of which is that the servant of a company cannot, by any act, impose a higher liability on another than it was under to himself, nor can a person rendering assistance to a company at the request of a servant, have any other or different remedy against it than the servant himself had. "The fundamental idea of the reasoning is, that the volunteer can have no greater rights than those servants have who are engaged in the service in which he joins; and it is not so much because he is a volunteer as because he makes himself one of a class, who, as against their masters, have no right of recovery for each other's negligence. This appears plainly enough from another consideration. If a servant is paid for his service, of course he has only the rights of associated servants, and those do not include a right of recovery for the negligence of a fellow servant. Why should he have a higher right where he is not paid? It is manifest, therefore, and it is perfectly well settled law, that one who is engaged in the service of a common master, and in a common employment, cannot recover against the master for the negligence of a fellow servant, whether he is paid for his service or not. Now, the cases of Potter *v.* Faulkner, and Flower *v.* Railroad, are full authority for the further position, that if the stranger joins in the service at the request of one of the servants of the master, he is in no better position than a mere volunteer. In the present case, the plaintiff's intervention in the service in which he was injured was induced by the order of his own superior, and the learned court below thought, and so held, that he could not be regarded as a volunteer, but rather as in the performance of a duty. At first blush this seems very forcible and quite reasonable, and it had much weight with the writer until a thorough study of the subject and of the authorities led him to a different view. As I regard the matter, the cases teach us that it is not because the associated servant is a volunteer that he is denied redress for the negligence of a fellow servant, but because it is the well established law of the relation between the servants whom he joins and their master, that there is no such liability on the part of the master. Hence, by joining them in their common service, he becomes, as to the master, one of them, with the same rights and duties as to the master, but with no higher rights as against him. Certainly, without his consent he cannot reasonably be subjected to a greater obligation, by the act of one of his servants in engaging the service of another, than he is under to that servant. If this be so, as was held in the cases cited, how does it matter in what manner the request of the defendant servant was communicated to the plaintiff? Let it be that it

came in the form of an order from his own superior, and that he was in duty bound to obey that order. It was still only done at the request of the defendant's servant, and the question we have to decide is the liability of the master. We have seen that his liability cannot be increased, without his consent, by the act of his servant, and it is that reason which is fundamental in the discussion which demonstrates his freedom from obligation for his servant's act. But if this is the determining reason of the argument, it is just as applicable where the servant's request is communicated through or made the basis of an order by a third person to the plaintiff."

135. In this reasoning one important consideration, we think, is left out of sight. A person who thus assists voluntarily expects to receive no recompense for his services, and therefore assumes no risk. In the event of rendering assistance, if he is to receive not only no pay, but no relief for an injury that may be sustained without any negligence on his part, why should he ever do anything under those circumstances for anybody? If an obstruction is on the track, which the conductor or engineer indicates in some way to a person to remove and he does so at the risk of his life, and knowing that he is entitled to no reward, even should he be injured, wisdom surely teaches that he ought to decline. Again and again have serious accidents been averted by the energetic action of volunteers, as they are called in the law. But we know of no better method of destroying all such voluntary action, which not infrequently has been of the most unselfish and sacrificing character, than the doctrine that for no injury sustained, however great in saving the property of another or lives committed to his care, neither the sufferer nor his family can recover a cent in the event that the owner or carrier is unwilling to bestow a reward.

136. Such a volunteer or rescuer stands on a higher ground than an ordinary employe, because he is to receive no reward for the service rendered. Surely, if he is to receive nothing for it under ordinary circumstances, the employer should render some relief if the service attempted was a valuable one whenever the volunteer was injured in performing it. Thus we are led to the distinction which we think ought to be observed in these cases. If the volunteer was a meddler, if he was doing a thing which he had no right to do, and which was useless, and especially if he was not requested by any employe, as in Gillen *v.* Rowley, then indeed his risk should not have been incurred, and he ought not to recover anything whenever he is injured; but if he is attempting to perform an *unusual* and *valuable* service, whether requested to do so or not, and is injured while performing it, then would not the interest of the employer, and often the public safety, be more perfectly regarded by establishing the right of a reward than by maintaining the present rule? This, as we have seen, impairs and seeks to destroy all voluntary service, however necessary to preserve

life and property; the other would stimulate men to deeds of sacrifice, if need be to preserve both. We are sure that the present rule would in the end work injurious results to the owners of property as well as to the public.

137. The act of a superintendent or other person who represents the employer in selecting servants, tools, machinery, instructing employes and the like, is regarded as the act of the employer himself. Consequently, if such a repesentative is negligent it is imputed to the employer and he is responsible therefor. This rule has been applied on several occasions (Lehigh Valley Coal Co. *v.* Jones, 86 Pa. 432, 349). In the Frazier case (Frazier *v.* Pennsylvania R. Co., 38 Pa. 104, 111), an employe was injured, as he contended, through an incompetent conductor; and the company sought to introduce evidence to prove that its superintendent had no knowledge of the conductor's incompetency. Mr. Chief Justice Lowrie remarked: "It is not the company but their officer having charge of this department of their business, that is expected to use ordinary care in the employment of proper conductors and other servants. His carelessness in this respect is theirs, and his knowledge is theirs. It was, therefore, quite relevant and important to show that the superintendent did not know that the conductor was a careless officer; supposing that the employment and oversight of conductors was part of the functions of the superintendent, which does not appear in the evidence, but seems to have been assumed. Standing for the company in this respect, his knowledge becomes one of the very issues in the cause, and the court was in error in rejecting the evidence."

138. In Decker's Case (Huntingdon & B. T. Mtn. R. & Co. *v.* Decker, 82 Pa. 119, 124), Mr. Justice Mercur said: "Where a railroad company employs a conductor who is unfit for the business and knows his unfitness, it is chargeable with the consequences of the conductor's negligence, even to one employed in the same general service. Knowledge of the superintendent, possessing the general powers stated, is knowledge to the company.* When a conductor is shown to be habitually intoxicated, it raises a presumption of negligence in case of accident" (Pennsylvania R. Co. *v.* Books, 57 Pa. 339).

139. In Lewis *v.* Seifert (116 Pa. 628, 647), Mr. Justice Paxson said: "There are some duties which the master owes to the servant and from which he cannot relieve himself except by performance. Thus, the master owes to every employe, the duty of providing a reasonably safe place in which to work, and reasonably safe instruments, tools and machinery with which to work. This is a direct, personal and absolute

* Frazier *v.* Pennsylvania R. Co., 38 Pa. 104; Caldwell *v.* Brown, 53 Pa. 453; O'Donnell *v.* Allegheny Valley R. Co., 59 Pa. 239; Ardesco Oil Co. *v.* Gilson, 63 Pa. 146; Patterson *v.* Pittsburgh & Connellsville R. Co., 76 Pa. 389.

obligation; and while the master may delegate these duties to an agent, such agent stands in the place of his principal and the latter is responsible for the acts of such agent. And where the master or superior places the entire charge of his business, or a distinct branch of it, in the hands of an agent or subordinate, exercising no discretion or oversight of his own, the master is held liable for the negligence of such agent or subordinate" (Mullan *v.* Phila. & Southern S. Mail Co., 78 Pa. 225; New York, L. E. & W. R. Co. *v.* Bell, 112 Pa. 400).

140. The exposition of the rule by Mr. Justice Woodward may also be profitably added (Mullan *v.* Phila. & Southern Mail S. Co., 78 Pa. 25): " 'Where the employer leaves everything in the hands of a middleman, reserving to himself no discretion, then the middleman's negligence is the master's negligence, for which the latter is liable' (Wharton's Law of Negligence, § 229; Grizzle *v.* Frost, 3 Foster & Finlayson 622). The principle that the master is exempt from responsibility to the servant from injuries received from the ordinary dangers of his employment, including the negligence of his fellow servants, is too deeply imbedded in our law to be disturbed. But where a master places the entire charge of his business, or a distinct branch of it, in the hands of an agent, exercising no discretion and no oversight of his own, it is manifest that the neglect by the agent of ordinary care in supplying and maintaining suitable instrumentalities for the work required, is a breach of duty for which the master should be held answerable. The negligence of the agent, with such powers, becomes the negligence of the master."

141. In Ardesco Oil Co. *v.* Gilson (63Pa. 146, 150), Mr. Justice Sharswood said: "The defendants were a corporation, and could only act through their officers or agents. It is their officer, having charge of their business who, for all practical purposes, must be regarded as the corporation itself (Frazier *v.* Pennsylvania R. Co., 38 Pa. 104). The same rule of liability must be applied to them as to natural persons. The duty which they owe to their servants and employes is the same. What employers owe to their servants and workmen is the exercise of reasonable care and proper diligence in providing them with safe machinery and suitable tools, and in employing with them fit and competent superintendents and fellow workmen. Not that they warrant the result, nor that extraordinary vigilance is exacted of them. It is nevertheless true, as stated by the learned judge below, in his charge, that what is due care and ordinary diligence will much depend on the kind of business which is carried on, and the sort of material which is handled. The proprietor of a powder mill must exert more precaution than the master of a blacksmith shop. So, in such an establishment as that carried on by the defendants below, in refining oil from crude petroleum, a material highly inflammable and ex-

plosive, we are bound to examine the question of negligence with a regard to this circumstance." *

142. This principle was applied on the occasion of the death of an employe from the explosion of a dynamite magazine, which was placedin the position it occupied by the direction of the superintendent of the employer. This act, Mr. Justice Gordon remarked, "So far as it concerned subordinate employes, was by the corporation itself, and could not be attributed to any of the fellow servants of the deceased" (Tissue *v.* Baltimore & Ohio R. Co., 112 Pa. 91, 97; Frazier *v.* Pennslvania R. Co., 38 Pa. 104; Patterson *v.* Pittsburgh & Connellsville R. Co., 76 Pa. 389).

143. The contention in this class of cases has not been over the principle, but whether the superintendent, foreman or other employe was an agent or representative of the employer, or a fellow employe of the person injured. For whenever it is proved that he is such a fellow employe the employer is not liable. This, therefore, is the pivotal question in the cases, some of which will soon be described.

144. This principle of liability for the acts of an employer's direct representative has been modified, and the employer's liability diminished, in an important manner. The courts have declared that the agent or vice-principal may serve in a dual capacity; he may serve not only as a representative but also as a workman with those around him. And when he does act with them, and not in giving orders or directions, his employer is not responsible for his negligence whereby his fellow employes may suffer. Thus, says Mr. Justice Williams (Ross *v.* Walker, 139 Pa. 42, 49): "If the principal be a corporation, or be unable for any reason to discharge these obligations in person, they must be discharged through an officer, agent or foreman. The person who is thus put in the place of the principal, to perform for him the duties which the law imposes, is a vice-principal, and *quoad hoc* represents the principal, so that his act is the act of the principal. This is true, however, only when and so long as his acts are in discharge of the duties which the principal owes to his employes. Beyond this line he acts as a workman, and not as a vice-principal. After the workmen have been employed, provided with tools and materials, and the work is actually entered upon, each workman is bound by the nature and terms of service to exercise reasonable care, diligence and skill in the performance of the work he has undertaken. He is also bound to consider and co-operate with his fellow workmen

* "If the master has placed the entire charge of the business in the hands of an agent, exercising no authority and no superintendence of his own therein, he may be liable for the negligence of such an agent, to a subordinate employe. This rule of liability for the negligence of a general agent applies whether the master be an individual or a corporation. Owing to the fact that the business of corporations is transacted by means of agents, they would escape the just measure of liability unless this rule applied to them. In this respect, both as to liability and for protection, they stand on the same footing with individuals." Mercur, J., in Lehigh Valley Coal Co. *v.* Jones, 86 Pa. 439.

with a view to promote the success of the industry or undertaking in which they are all engaged. He is as much bound to discharge the duty which the law casts upon him, as is his employer. His failure to do what he is thus bound to do is a breach of duty towards his employer and his fellow workmen for which he is legally liable. For this reason the courts have uniformly held that a workman who has been injured by the act or negligence of his fellow workman must look for his compensation to him who was the author of the wrong and not to their common employer."

145. If this reasoning be sound, and the employer is relieved from liability when his representative or director engages in labor with the workmen, why should not the employer himself be relieved when he is thus employed?* But the law has declared that the employer is responsible for his own direct acts of negligence to his employe. The law has not yet limited his responsibility to directory acts; but we perceive no reason why it should not go as far with himself as with his substitute. On the other hand, if he cannot be relieved from the consequences of his negligence, why should he be relieved of the consequences of the negligence of his representative?

146. We think that the sounder reason for relieving the employer from liability in such cases is, that his employment with his employes is incidental, and not his primary occupation. His chief employment is in directing or conducting his business. And on this distinction should turn his liability for the acts of his representative. If he is chiefly employed as a workman, and his authority to direct or give orders is incidental, then he should be regarded as a fellow employe with his working associates; but if he is chiefly employed in directing the business, and his employment as a common workman is an incidental and inferior service, then his employer should be held liable for his negligence whenever he would be if acting himself. By observing this distinction the employer would be liable for the same acts of his representative as he would be if they were done by himself, and thus the harmony of the law would be preserved. In truth, this distinction perhaps was observed in Duffy *v.* Oliver Brothers (131 Pa. 203), though the case is so briefly reported that no clear inference can be drawn from it.

147. The courts, therefore, while easily defining the liability of an employer for the acts of his representatives, in many cases have had great difficulty in determining whether the servant was a representative or an employe. The importance of the inquiry is clearly seen, for whenever an employer serves in a representative capacity the principal or employer is liable for his negligence, while he escapes liability whenever his employe serves as a fellow employe.

148. To determine the relationship of a servant, whether he is a

* Judge Lowrie declared that he was relieved in the Strange case.—10 Am. L. Jour. 398.

representative of the employer or an emplcye, may seem to many to be an easy thing, but experience has proved otherwise. Of course, the duties of those who fill a multitude of positions are so clearly defined that there is no difficulty in determining whether their occupants are representatives or fellow employes. But the duties of some positions are very near the line, and it is by no means easy to classify the persons who perform these. The courts have tried to discover lights by which they can steer in pursuing their inquiries, but none have been found that yield much aid outside precedents, or actual relationships that have been formally determined. In one of the best-reasoned cases in this state, Mr. Justice Mercur inquired:* "Who are fellow servants in contemplation of law? To constitute such they need not at the time be engaged in the same particular work. It is sufficient if they are in the employment of the same master, engaged in the same common work, and performing duties and services for the same general purposes. The rule is the same, although the one injured may be inferior in grade, and is subject to the control and direction of the superior whose act caused the injury, provided they are both co-operating to effect the same common object. The true reason upon which, I think, this rule rests is, that each one who enters the service of another takes on himself all the ordinary risks of the employment in which he engages, and that the negligent acts of his fellow workmen in the general course of his employment are within the ordinary risks."†

149. The remarks of Mr. Justice Paxson may be added (Lewis *v.* Seifert, 116 Pa. 628, 646): "To constitute fellow servants the employes need not be at the same time engaged in the same particular work. It is sufficient if they are in the employment of the same master, engaged in the same common work and performing duties and services for the same general purpose. The rule is the same, although the one injured may be inferior in grade, and is subject to the direction and control of the superior whose act caused the injury, provided they are both co-operating to effect the same common object (Keystone Bridge Co. *v.* Newberry, 96 Pa. 246). Thus we have repeatedly held that a 'mining boss,' under the act of March 3, 1870, is a fellow workman with the miners, and that the mine owners are not responsible for his negligence (Delaware & Hudson Canal Co. *v.* Carroll, 89 Pa. 374). This, however, is in part owing to the fact that the duty of appointing a mine boss is imposed upon the mine owners by the act of assembly; hence, the responsibility of the latter would seem to

* Lehigh Valley Coal Co. *v.* Jones, 86 Pa. 432, 439.

† Lewis *v.* Seifert, 116 Pa. 628; New York, Lake Erie & W. R. Co. *v.* Bell, 112 Pa. 400; Duffy *v.* Oliver Brothers, 131 Pa. 203; a large number of cases are cited by Justice Mercur in the Jones case, 86 Pa. 432.

cease when they had exercised due care in the selection of that person. Be that as it may, it is well settled that mere difference in rank or grade does not change the rule."

150. Mr. Justice Williams has contributed something to the discussion (Baird *v.* Pettit, 70 Pa. 477, 482). "Servants, it is said, are engaged in a common employment when each of them is occupied in service of such a kind that all the others, in the exercise of ordinary sagacity ought to be able to foresee, when accepting their employment, that it may probably expose them to the risk of injury in case he is negligent." *

151. Employes may be fellow servants, though of different rank and grade of employment (National Tube Works Co. *v.* Bedell, 96 Pa. 175, 179). In the case of the Keystone Bridge Co. *v.* Newberry (96 Pa. 246), a foreman was employed, named Wymond, and two others who were injured. In reviewing the case, Mr. Justice Green remarked that while Wymond had charge of the work in question he was himself a workman and worked with the other men. The three made the structure which gave way and caused the accident. "It is quite clear to us that Wymond and the men of whom he had charge were engaged in one common pursuit, seeking to accomplish one common object, and that all of them were subject to the orders of another, who was their common superior. In these circumstances we think this case is ruled by the cases of Lehigh Valley Coal Co. *v.* Jones (86 Pa. 432), and Del. & Hudson Canal Co. *v.* Carroll (89 Pa. 374)." In the case of Del. & Hudson Canal Co. *v.* Carroll, Mr. Justice Paxson, in delivering the opinion of the court, said: "There is no room for the allegation that a mining boss, under the mine ventilation act of 1870, is an agent of the mine owner or a co-employer. He is clothed with no powers of engaging and discharging miners and laborers at pleasure. He is merely a fellow servant with the miner. * * * He has no general power of control. His duties are confined to special matters. That they are different from those of others of his fellow colaborers, or even that they are of a higher grade, does not matter."

152. In the case of Caldwell *v.* Brown (53 Pa. 453, 456), in which it was held that an engineer was a fellow employe for whose acts the employers were not liable, Mr. Justice Read, in the course of the opinion, quoted Gilman *v.* Eastern Railroad (10 Allen 233), in which it was held that, "in case of an injury to one servant by the negligence of another, it is immaterial whether he who causes and he who sustains the injury are or are not engaged in the same, or similar labor or in positions of equal grade or authority. If they are acting together

* An employe who furnishes men and materials for shoring a trench is not liable to a laborer who while digging in it is injured by the neglect of others to shore it properly; they are his fellow servants, McKinzie *v.* Philadelphia, 8 Pa. Co. Ct. Rep. 293.

under one master in carrying out a common object, they are fellow servants."*

153. This question, however, which was so easily settled at the start in favor of the employer, and has been not less vigorously maintained, has been settled differently by the courts elsewhere.† Numerous and contradictory decisions have been rendered. It is easy to perceive the difficulties that must spring in applying a rule which renders an employer liable to an inferior servant for the acts of a superior. Which servant shall be regarded as superior and which inferior when from the nature of their occupation, or almost any other test, it is evident that many of them are quite on the same grade? The very asking of the question reveals the difficulties in answering it. Furthermore, does not an examination into the duties performed by servants in many cases show that the distinction of inferior and superior service is artificial?

154. But we think another basis of liability may be found which is not so artificial and which squares perfectly with justice. Are the duties performed by a servant mainly of a representative character, such as the master himself must perform if they were not delegated to another, or are they such as can be performed without direction? If an engineer is told to run an engine he is supposed to know what to do without further instructions. He certainly is a fellow servant with those who are running other engines and performing other services about the train. But what shall be said of the person who gave the order? This originated from the principal himself, the president of the company, or the superintendent, or an assistant superintendent, or some one having directoral authority. The engineer simply executed the order. He never originated it. The person who gave it either had original authority to give the order, or acted as a transmitter from the one who had. In either case he was far more closely allied to the employer, to the source of authority, than he was to the executor. Would not this test be practicable in determining who were fellow employes? What is the nature of the service rendered? Is it one that the employe must himself render unless done by another for him? Is the service in the nature of an original order or direction, or transmitted by another; or is the service the execution of the order? We maintain that the originator of the order or transmitter, is clearly separated from the executor of it; and that such persons are not related as fellow servants. If the Supreme Court of Pennsylvania has obliterated the distinction by declaring that in almost all cases employes are fellow servants, it does not follow that the distinction does not exist, or that it ought not to be observed. Surely a person who originates orders for others to execute stands nearer to the employer than

* See also Wright *v.* N. Y. Cent. R. Co., 25 N. Y. 562; Weger *v.* Pennsylvania R. Co., 55 Pa. 460.

† Chicago, M. & St. P. R. Co. *v.* Ross, 112 U. S. 377. See McKinney on Fellow Servants, section 43.)

to the person who executes them.* More comprehensively, all persons employed in a great industrial enterprise, like a railroad, a textile factory, or steel plant, are directors or executors. Together they form a single whole. But the executors, the workingmen, in the popular sense, are more closely related to the tools and machines they use than to those who direct them. A clear separation exists between the two classes. The workingmen may be regarded as in a higher or lower grouping than their directors, or they may be divided into two groups, some higher and others lower, but in whatever way the grouping is made, the distinction between the directors, or representatives of the employer, and the workingmen clearly exists. They pull while the others drive. It is true that sometimes the same person pulls as well as drives; and then to determine whether he should be classed as director or workman, the question must be answered, which is his principal function, to direct or to execute? If directing be his principal business, and his use of tools or machinery only incidental, then he must be classed as a director, or a representative of his employer, otherwise he should not be. It is true that if the basis of liability was founded on this distinction, the classification could not always be easily determined, but it is believed that this could be done more easily than the existing basis of fellow-service can be ascertained.

155. We will now show who are regarded as fellow servants, and who, therefore, assume the risk of injury by their fellow employes and consequently cannot recover of their employer. A brief statement of most cases will suffice.

156. In many of them in which the employe has sought to recover his action has been founded on the negligence of the foreman, and the liability of the employer has turned on the question, whether he was a fellow employe with the injured employe or not. Thus an employe in one of the several gangs employed in a series of shops belonging to a company cannot recover for an injury caused by the negligence of an employe in another gang (New York, L. E. & W. R. Co. *v.* Bell, 112 Pa. 400). More fully stated the workmen were thus related: a railroad company, in operating its shops, foundry, hammer shop, paint shop, and general machine shops, employed a master mechanic, who had authority to employ and discharge workmen. Under him was a general foreman. Each shop also had its foreman, and under the shop-foreman were gang-foremen. A. belonged to a gang who

*In Taylor *v.* Evansdale & Terre Haute R. Co., 121 Ind. 124, the court speaking through Elliot, Ch. J., said: "It is not easy to conceive how it can be justly asserted that one who commands an act to be done, and who possesses the authority to command and enforce obedience from all servants employed in a distinct department by virtue of the power delegated to him by the master, is no more than a fellow servant; for in the absence of the master, the command, if entitled to obedience, must be that of the master conveyed through the medium of anagent. Nor can it be held, without infringing the principles of natural justice, that if he who is authorized to give the command makes its execution unsafe, the employe, whose duty it is to obey, has no remedy for an injury received while doing what he was commanded to do. Nor do the better reasoned authorities justify such a conclusion."

brought into the shops the supplies on cars and took out the manufac tured articles. B., the foundry foreman, obtained permission from C., the master mechanic, to convey a gas-pipe from one shop to another, over a railroad track, used by the gang to which A. belonged, which separated the two shops. D., a member of one of the gangs under B., put up the pipe so low that in passing under it on a car A. was struck and injured In an action by A. against the company to recover damages for the injury thus sustained it was decided that A. and D. were fellow servants, and therefore A. could not recover for the negligence of D. in putting up the gas-pipe by which he was injured.

157. In Ross *v.* Walker (139 Pa. 42, 50), an employe sought to hold his employer liable for an injury that was caused by the breaking of a defective timber which was used in constructing a bridge. It was maintained that it was the duty of the defendant's foreman, Duffey, to select the timber, and that he was negligent in selecting such a piece. Said Mr. Justice Williams: "It was the duty of Walker, as employer or principal, to provide the men employed to build this bridge with suitable machinery and appliances; to furnish materials sufficient in quantity and suitable in character; to employ men who were reasonably competent to do the work for which they were wanted, and to give them the benefit of the services of a reasonably competent foreman. All this, as we understand the evidence, was done. If so, the employer had filled the measure of his legal liability to his workmen. For an error in judgment or for a neglect of duty on the part of any one of his employes, from the foreman down to the humblest unskilled laborer, he was not liable. It was not material to this inquiry to know whether 'Duffey had entire charge and control of the work' as a foreman or not; nor to know whether he selected from the mass furnished by the employer the materials to be used for any particular purpose or not; nor whether he hired and discharged men or not. The inquiry is, was it the employer's duty, after having provided materials ample in quantity and quality, to supervise the selection of every stick out of the mass for every purpose? To state this question is to answer it. This was not his duty, and for that reason, Duffey, if he did select the timber, which is more than doubtful under the testimony, did not represent Walker as a vice-principal in such a selection. He and his fellow workmen were to judge of the suitability of the pieces of timber they used for the uses to which they put them, and their error in judgment, or their careless discharge of this duty, was their fault or failure, and not that of their employer. He had discharged his duty when he furnished an abundance of materials from which they could select what was needed. The actual selection out of this stock, of the sticks needed from time to time, was not his duty, but that of the workmen themselves. If there was a visible defect in a stick, common prudence and common care on their part would have

rejected it, and supplied its place with another out of the stock at their command."

158. Turning to specific relationships that have been established by the courts, the foreman of stone masons employed by a railroad company, and a tender to them are fellow servants (Weger *v.* Pennsylvania R. Co. 55 Pa. 460). So is a foreman who acts as manager during the latter's absence (Duffey *v.* Oliver Brothers, 131 Pa. 203). Likewise a "mining boss" and a "driver boss" are fellow servants (Lehigh Valley Coal Co. *v.* Jones, 86 Pa. 432). A mine boss is a fellow servant with a driver boy employed to haul coal from a mine (Waddell *v.* Simoson, 112 Pa. 567), and also with a miner. Says Mr. Justice Paxson: "It has been repeatedly held that a 'mining boss' is such a fellow servant as in case of an injury to other employes through his negligence, the master is not responsible."* And again, Mr. Justice Paxson remarked in Roby's case (p. 368), "Reasonable care must be exercised in selecting a competent person for such position, but when such care has been exercised the cases are clear that the company employing him is not liable for his negligence. This results necessarily from the act of April 28, 1877, P. L. 58, which imposes upon the company the duty of providing a mining boss. This act was passed, as its title shows, to protect the health and safety of the persons employed in the bituminous coal mines, and is a wise and just measure. The one great danger of such mining operations has always been the accumulation of foul air and gases, and it was to avoid this and secure proper ventilation that the fifth section of the act requires the mine owner, *nolens volens*, to employ a competent and practical inside overseer to be called a 'mining boss,' etc. The section then proceeds to define his duties, the principal of which is to see that the mine is kept properly ventilated. The mining boss is, therefore, a creature of the legislature, selected by the mine owner in obedience to the command of the law, and in the interest and for the protection of the miners themselves. It has therefore been properly held that where the mine owners have exercised reasonable care in the selection of a competent mining boss, they are not liable for injuries resulting from his negligence. His co-employes take the risk of his negligence, precisely as in other cases. If he is incompetent or careless, they can at once discover it and notify the superintendent, while the owners, with every wish to protect the miners, have no such opportunities of information. It is very plain, as was held in Waddell *v.* Simoson, that the operator of a coal mine fulfils the measure of his duty to his employes if he commits his work to careful and skilful bosses and superintendents, who conduct the same to the bets of their skill and ability. More than this he cannot do, and with such duty

*Reese *v.* Biddle, 112 Pa. 72, 80; Lehigh Valley Coal Co. *v.* Jones, 86 Pa. 432; Del. & Hudson Canal Co. *v.* Carroll, 89 Pa. 374; Keystone Bridge Co. *v.* Newberry, 96 Pa. 246; Redstone Coke Co. *v.* Roby, 115 Pa. 364.

performed, whatever of risk or danger remains must rest upon the miners themselves. Their work is always hazardous with the best appliances and the highest degree of care. Their own safety requires that in measuring responsibility for accidents care should be taken to determine it justly, with due regard to the respective rights of duties of the parties, employers and employed."* A gang boss, having no general power of control but acting as foreman of men who are engaged by the superintendent of a company, whose orders he must obey, is a fellow servant with them. (Keystone Bridge Co. *v.* Newberry, 96 Pa. 246). Finally a foreman whose authority is general and not special is a fellow servant with the employes under him (Gerwig *v.* Folwell, 13 W. N. Cas. 267).

159. Though the supreme court has not been troubled in classifying foremen as fellow servants, the highest tribunals in many states have had no small difficulty in determining their relationship. Outside the duty of the employer to use ordinary care in selecting employes, tools and apparatus, safe places for them to work, etc., Mr. Justice McBride has remarked: "The authorities are in irreconcilable conflict and display the widest diversity opinion. Thus in one jurisdiction it is held that a section foreman on a railroad represents the master, and is not a fellow servant with those under his control, while in others the opposite extreme is reached" (Nall *v.* Louisville, N. A. & C. R. Co., 44 Alb. L. Jour. 230). The Supreme Court of Pennsylvania, however, has easily solved this difficulty like every other of a kindred nature, by declaring that foremen are fellow servants whatever is the nature of the service performed by them. One cannot help thinking that the real nature of their service ought to be regarded more seriously by our courts, as the question has been by the courts elsewhere. It is true that by establishing this rule the administration of the law is easy, but whether the court has done wisely in sweeping within the circle of fellow service a person whose chief duties are evidently of a representative character may be questioned.

160. Continuing our review, a carpenter, who is working with a millwright and machinist, and receiving directions from him, though both are directed by the general manager and superintendent of a company, are fellow employes (National Tube Works Co. *v.* Bedell, 96 Pa. 175). Thus, a manufacturing company had leased a rolling mill which was in need of repairs. The general manager and superintendent of the company sent a millwright and machinist, who were in the employ of the company under daily pay, to take charge of the repairs. He employed a carpenter and directed him, but he was paid by the company. While thus employed he was injured. It was held

* When a foreman cannot recover for an injury, § 72, note.

that he was a fellow servant with the millwright and could not recover from the company for his injuries.* Likewise a person who was engaged in drilling holes in iron plates used in the construction of a building, is a fellow servant with those who are employed in clearing up the rubbish and putting it through the open floor into the cellar (Somer *v.* Harrison, 8 At. Rep. 799).

161. A brakeman and car inspector are fellow employes (Phila. & Reading R. Co. *v.* Hughes, 119 Pa. 301, 314), and so are a brakeman and a car repairer (Campbell *v.* Pennsylvania R. Co., 3 East.Rep. 826,) and an engineer and station master (Dealey *v.* Phila. & Reading R. Co., 4 At. Rep. 170).

162. An employe in a rolling mill engaged in beating iron is a fellow servant with an engineer who runs the same boiler (Caldwell *v.* Brown, 53 Pa. 453) ; and likewise, the operator of a machine is a fellow servant with the engineer who runs the engine that furnishes the power for the machine (Phila. Iron & Steel Co. *v.* Davis, 111 Pa. 597).

163. An operative in a shop having a foreman, is a fellow servant with an operative in another shop having a different foreman, but both having the same general superintendent (Reading Iron Works *v.* Deevin, 109 Pa. 246). More fully stated, a company was engaged in manufacturing iron for different purposes, and maintained several establishments. Each had a separate purpose and foreman, but all were under a general superintendent. Devine was employed to operate a steam hammer at one of the departments known as the forge. The company, in replacing the hammer with a new one took some of its operatives from another deartment known as the foundry and engaged them to complete the repairs, in the course of which the operatives negligently left a supporting beam unfastened. Devine was not present when this was done, but in other respects assisted to some extent in the completion of the repairs. He was directed by the foreman of the forge to see that "everything was right" about the machine. On the completion of the repairs Devine resumed the operation of the machine and was killed by the falling of the unfastened beam. In an action by his widow against the corporation it was de-

* Mercur, J. said: "Eardly and the defendant in error were co-laborers in the work. They were fellow servants in the same common employment. Although Eardly was permitted to select some of the men who were to assist in doing the work, yet he, as well as they, and all engaged therein, were hired by the day and paid by the company. A master is not liable to his servant for the negligence of a fellow servant while engaged in the same common employment.—Sherman & Redfield on Negligence, § 86. The master does not warrant the competency of any of his servants to the other.—Id. It matters not that they are of unequal grade if the services of each in his particular labor is directed to the same general end. And although the inferior in grade is subject to the control and directions of the superior whose act caused the injury, the rule is the same.—Whart. Law of Neg. § 229; Lehigh Valley Coal Co. *v.* Jones, 86 Pa. 432; Priestley *v.* Fowler, 3 Ex. 1; Wonder *v.* B. & O. R. Co., 32 Md. 411. If then, as we have shown, Eardly and the defendant in error were fellow servants, even if the former was negligent on the occasion of this injury, that fact is insufficient to charge the company with negligence in appointing the negligent employe.—Whart. on Neg. § 240; Feltham *v.* England, L. R. 2 Q. B. 33."

cided that he was a fellow servant with the operatives who made the repairs and whose negligence caused the accident.

164. Having finished the review of nearly all the cases in which the courts have decided that the person injured was a fellow employe, and therefore could not recover of his employer, we will review the others in which the relationship did not exist. One of the most noteworthy of these, because so very near the line, is Mullan's Case (Mullan *v.* Phila. & Southern Mail S. Co., 78 Pa. 25, 31). A man named Corcoran was the chief stevedore of the company, and who had charge of loading and unloading the vessels. One of the employes sued for an injury which was caused by the breaking of a rope that had been spliced. The lower court decided that Corcoran was a fellow workman with the plaintiff and consequently he could not recover. In reviewing the case Mr. Justice Woodward remarked: "Assuming, in the first instance, that Corcoran had entire control of the selection of the machinery, and that, consequently, the defect was one for which he was chargeable, it is difficult to see why the plaintiff should not have been permitted to ask the jury to find that the defendants had conferred on him such unlimited authority as to make him their representative, and to make themselves responsible for his default. * * * The negligence of the agent, with such powers, becomes the negligence of the master. In this case there was some evidence that the entire duty of providing the appliances for loading and unloading the vessels of the defendants, had been intrusted to the discretion of Corcoran. And just to the extent to which the proof went in fixing upon him the responsibility for the selection of the rigging and for adjusting and working it, did the same proof tend to establish the fact contended for by the plaintiff, that Corcoran was clothed, as to these duties, with the ultimate power and authority of the defendants. Upon the evidence submitted it was the right of the plaintiff that a jury should pass."*

165. The case of Hass against the same company (Hass *v.* Phila. & Southern Mail S. Co., 88 Pa. 269), in some respects was quite similar to Mullan's. The company made a special contract with a stevedore to unload and load its vessels at New Orleans. Neither the master of the vessel nor his crew had anything to do with the work, it was in the exclusive charge of the stevedore, and he employed his own men and used his own machinery and cargo planks. A seaman on one of the company's steamers, while on duty as a night watchman, having stepped on one of these planks, which tilted, fell overboard and was seriously injured. He sued the company, but was unsuccessful. The supreme court, in reviewing the case, said: "It was left to the jury to find whether the chief stevedore was a simple agent, with the instruction that if he was, the company was liable: but not if he was

* See § 140 for a further exposition of the law applicable to the case.

in an independent employment. If, however, the accident resulted from the negligence of the master or crew, then the company was not liable to another of the crew. There was no evidence in the cause that the company had placed the entire charge of its business in the hands of either the master or chief stevedore, so as to make the negligence of either their negligence."

166. A train dispatcher is not a fellow servant with a train employe (Lewis *v.* Seifert, 116 Pa. 628, 649). A verdict having been rendered against a railroad company in which the relationship of these employes was established, it sought to have the verdict set aside on the ground that they were fellow employes. Mr. Justice Paxson said: "The distinction between a general dispatcher, one who has the absolute control of all the trains upon the road, and the conductor or engineer of a train is manifest. The latter have the duty of obedience. Their business is to run their trains under orders from the dispatcher, and if an employe is injured as the result of their negligence, the company is not liable. They are in the same common employment, and are laboring together to the same end, under orders from superior authority. The argument for the plaintiff in error, if carried to its logical conclusion, would wholly obliterate all distinction between railroad employes from the president down, as they may all be said to be, in one sense, in the same common employment and paid by the same corporation."

167. A draughtsman in a locomotive works and a carpenter employed in jobbing in the same works, are not fellow servants (Baird *v.* Pettit, 70 Pa. 477).

168. A carpenter who is employed by a railroad company is not a fellow servant with those who run its trains or repair its track (O'Donnell *v.* Allegheny Valley R. Co., 59. P. 239).

169. "Nor are those agents who are charged with the business of supplying the necessary machinery to be regarded as fellow servants but rather as charged with the duty which the master owes to the servant, and the neglect of such agent is to be regarded as the neglect of the master" (Gordon, J., Pennsylvania & N. Y. Canal & R. Co. *v.* Leslie, 109 Pa. 296, 301). But if an operative of a machine assists another operative in repairing they are fellow servants (Reading Iron Works *v* Devine 109 Pa. 246).

170. When a day laborer has ceased to work and has left the shop, the relation of employed and employer has ended, and he can recover for an injury that may happen afterwards like any other person (Baird *v.* Pettit, 70 Pa. 477).

171. The engineer and foreman of a gravel train are not fellow employes with the boiler maker in a repair shop (Pennsylvania & N. Y. Canal & R. Co. *v.* Leslie, 109 Pa. 296. See New York, L. E. & W. R. Co. *v.* Bell, 112 Pa. 400).

172. A conductor of a private freight car is not a fellow servant with the engineer of the train to which the car may be attached (Cumberland Valley R. Co. *v.* Myers, 55 Pa. 288). Thus, a conductor of a private freight car who was not in employ of a railroad company, at the request of the company's conductor of the train, cut loose the cars following his own, fell off the train and was injured. The court charged that if the injury was not caused by drawing the bolt, but by the negligence or misconduct of the engineer in increasing the motion of the cars with a violent, unnecessary and unusual jerk, after the plaintiff had resumed his proper position on the car, such as he could not anticipate and guard against, he might recover. This was declared to be correct. The plantiiff after performing a voluntary duty resumed his proper place as passenger and became entitled to the protection of that relation.*

173. Formerly, an employe of a railroad company was not regarded as a fellow servant with the employes of another railroad company, and could recover for an injury occasioned by their negligence (Catawissa R. Co. *v.* Armstrong, 49 Pa. 186). His right to recover in such cases, however, has been taken away by the following statute: "When any person shall sustain personal injury or loss of life while lawfully engaged or employed on or about the roads, works, depots and premises of a railroad company, or in or about any train or car therein or thereon, of which company such person is not an employe; the right, of action and recovery in all such cases against the company shall be such only as would exist if such person were an employe: provided, that this section shall not apply to passengers" (Sec. 1, act of April 4, 1868). This statute has prevented a recovery in the reported cases mentioned in the note.*

174. In pronouncing on the constitutionality of this act, Mr. Chief Justice Agnew has remarked: "The liability of the company for the acts or omissions of others, though they be servants, is only an offspring of law. The negligence which injures is not theirs in fact, but is so only by imputation of law. The law which thus imputes it to the company, for reasons of policy, can remove the imputation from the master and let it remain with the servant whose negligence causes the injury" (Kirby *v.* Pennsylvania R. Co., 76 Pa. 506).

175. A review of the cases involving the question of fellow service clearly shows that the line of distinction is highly artificial, and ought not to serve as the basis of a liability so important as that under con-

*Mulherrin *v.* Delaware, Lack. & Western R. Co., 81 Pa. 366; Fleming *v.* Pennsylvania R. Co., 134 Pa. 477; Stone *v.* Pennsylvania R. Co., 132 Pa. 206; Cummings *v.* Pittsburgh, Cin. & St. Louis R, Co., 92 Pa. 83; Ricard *v.* North Penn. R. Co., 89 Pa. 193; Phila. Traction Co. *v.* Orbann, 119 Pa. 37; Richter *v.* Pennsylvania Co., 104 Pa. 511; Christman *v.* Phila. & Reading R. Co., 28 W. N. Cas. 5; Baltimore & Ohio R. Co. *v.* Colvin, 118 Pa. 230; Gerard *v.* Pennsylvania R. Co., 5 W. N. Cas. 251. See also Lockbart *v.* Lichtenthaler, 46 Pa. 151; Lackawanna & Bloomsburg R. Co. *v.* Chenewith, 52 Pa. 382.

sideration* We cannot forbear saying that the argument for the visiting of the consequences of an employe's negligence to another employe on the employer is founded on sentimental or sympathetic considerations rather than on those of justice. An employe is injured by the negligence of another employe of the same employer. Both are supposed to be suitable for their employments, and if their employer was negligent in selecting them he was, and should be, responsible for the consequences. But an injury to one of them has happened through the sole negligence of the other, and yet it is maintained that not the negligent employe, but the employer should be responsible for the consequences. 'If, in fact, he is not negligent why should the law impute negligence to him and require him to pay for an accident caused by no fault of his?

176. There is no ground, then, for holding him liable unless he is made an insurer by law for his employes. Should he be declared an insurer against the accidents they incur while in his employment? It must be admitted that he makes no express contract of this kind, nor is any implied in fixing the rate of wages. They are not lower than they would otherwise be because he has promised to reimburse his employe for the consequences of any injury sustained by the negligence of another employe. No insurance fund is created by employers for this purpose. They do not recognize, and never have recognized, their liability as insurers. If this reasoning be correct, we are unable to perceive any real distinction for the line of liability established between fellow servants and others. There is no real duty to respond to their injuries in any case when the employer himself is free from negligence. He is an insurer against accidents to all his employes who are injured by the negligence of other employes, or he is an insurer for none.

177. But he may be an insurer. There is no law against undertaking it. And if he were, would not both the employer and the employed be the gainers? Some of the railroad companies are experimenting in this direction, and with the most gratifying results. The last Report contained a complete description of all the associations that have been established by the railroad companies in this state. Cannot this method of adjusting losses arising to employes be extended to other employes of labor, and insurance funds be established by the united action of both classes, and also such legislation be enacted as may be needful to render the maintenance and distribution of such a fund effective, as well as the establishment of a competent board or tribunal to determine the liability of employers in all cases of injuries to their employes whenever they are unable to make an adjustment with them?

* For the practicability of basing the liability on the nature of the service, whether original or directory, or only executive, see §§ 154.

178. But there is a large number of accidents, the cause of which cannot be traced to the negligence of any one. Who shall be responsible for these, or shall they be borne by those who have received them? Shall the employer's loss end with the loss of property, and his workmen endure, as best they can, the ill fortune which has overtaken them? Since no one is negligent in such cases may not the law fairly impose the loss on the employer on two grounds? First, because he is the prime cause of the accident in setting the machinery or agencies in motion which have caused it; and, secondly, because he can better afford to sustain the loss than his employes. But, some one may ask, if he should be held on the first ground, ought he not to be responsible for all losses to his employes for the same reason? Surely not, his non-liability should be limited to cases which are free from the element of negligence. When that is involved in the accident and is ascertained, the author of it should be responsible for the consequences.

179. Though an employe cannot recover for an injury caused by the negligence of a fellow employe, because the law declares that he assumes the risks of this nature when accepting employment, the employer's exemption from liability only applies to those cases in which his employes are injured by the negligence of their fellows. When this relation of fellow service does not exist "there is no difference," in the language of Mr. Justice Sharswood, between "liability to a stranger and to a servant for a man's own negligence or want of skill" (Ardesco Oil Co. *v.* Gilson, 63 Pa. 146, 151). In other words, an employer is responsible for his own direct negligence. Says Mr. Justice Williams in Johnson *v.* Bruner (61 Pa. 58, 61), "It is well settled that where an injury happens to a servant in the course of his employment the master is responsible if it was occasioned by his negligence. If it was the result of the hazardous nature of the employment, without any fault on the part of the master, he is not liable; but if his negligence was the direct and proximate cause of the injury, he is responsible whether the employment was hazardous or not." In this case the plaintiff's son was employed in the carding and spinning-room of a mill. While carrying an armful of waste from the carding machine into the waste room he fell through an open trap door or hatchway and was killed. There was no railing or protection of any kind around it, and "was described as dangerous; and from its location, size and proximity to the door could not have been otherwise." * * * "Was it not then the duty of the defendant to have had a railing or other protection around it," said the supreme court in reviewing the case, "and was he guilty of no negligence in permitting it to remain open, without any notice or warning, to the hazard of the lives and limbs of his employes?" * * * Without intending to intimate what the finding of the jury should be, we are clearly of the opinion that the

court erred in withholding the case from them, and ordering a judgment of nonsuit."* Of course, the employer practically escapes the consequences of his own direct, personal negligence, as we have seen, whenever his employe has knowledge of it and continues in his employment. This is one of the most singular anomalies of the law.

180. An employe, therefore, can recover from his employer for an injury caused by his negligence; and also from an employe by whose negligence he has been injured. He cannot recover, however, when he himself has contributed to the injury. Even if the employer or his servants have been negligent, and far more so than the injured employe, he can recover nothing if the cause of injury can be traced to any negligence of his own, however slight.

181. Before reviewing this series of cases, however, we may inquire what is contributory negligence? In Greiner's Case (Lehigh Valley R. Co. *v.* Greiner, 113 Pa. 600, 604), Mr. Justice Clark said: "It is a principle of law, well settled in this state, that where a man negligently, and without excuse, places himself in a position of known danger, and thereby suffers an injury at the hands of another, either wholly or partially by means of his own act, he cannot recover damages for the injury sustained. The contributory negligence which prevents recovery for an injury, however, must be such as co-operates in causing the injury, and without which the injury would not have happened (Gould *v.* McKenna, 86 Pa. 297, 302). The true test is found in the affirmative of the question, did the plaintiff's negligence directly contribute, in any degree, to the production of the injury complained of? If it did, then there can be no recovery; if it did not, it is not to be considered (Creed *v.* Pensylvania R. Co., 86 Pa. 139; Thirteenth & Fifteenth St. Pass. R. Co. *v.* Boudrou, 92 Pa. 475, 480). The question of negligence is ordinarily a question of fact, and ought to be submitted, under proper instructions, to the determination of a jury. Where the facts are disputed, where there is any reasonable doubt as to the inference to be drawn from them, or when the measure of duty is ordinary and reasonable care, and the degree varies according to the circumstances, the question cannot, in the nature of the case, be considered by the court, it must be submitted to the jury (Gramlich *v.* Wurst, 86 Pa. 74, 78). But where the facts and the inferences therefrom are undisputed, where the precise measure of duty is determined, the same under all circumstances, where a rule of duty in a given exigency may be certified and accurately defined, the question is for the court and not the jury (McCully *v.* Clarke, 40 Pa. 399, 406; Reeves *v.* Del., Lack. & Western R. Co., 30 Pa. 454; Schum *v.* Pennsylvania R. Co., 107 Pa. 8). It has been held in a number of cases that it is the plain, imperative duty of a traveler before crossing the track of a rail

*See §§ 101–104. A railroad company is responsible for the consequence of its negligence caused by itself or its agents.—Pennsylvania R. Co. *v.* Aspell, 23 Pa. 147.

road, to stop, look and listen for approaching trains, and his failure so to do in case of injury has been declared not to be evidence of negligence merely, but negligence *per se*, and therefore a question for the court."*

182. Mr. Chief Justice Agnew has declared that "the contributory negligence which prevents recovery for an injury, is that which co operates in causing the injury, some act or omission concurring with the act or omission of the other party to produce the injury (not the loss merely) and without which the injury would not have happened. A negligence which has no operation in causing the injury, but which merely adds to the damage resulting, is no bar to the action, though it will detract from the damages as a whole."†

183. "Negligence," says Mr. Justice Williams (Johnson *v.* Bruner, 61 Pa. 62), "is ordinarily a question for the jury. It is always a question for their determination when there is any doubt as to the facts, or the inferences to be drawn from them. But the evidence may show a case of such clear negligence arising from obvious disregard of duty and safety as to make it incumbent on the court to determine it as a question of law (Pittsburgh & McConnellsville R. Co. *v* McClurg, 56 Pa. 294)." In this case the plaintiff's son, while going towards a waste-room in a factory with an armful of waste, fell through a trap-door and was killed. It happened in the daytime, and it was contended that he was negligent in not seeing the door. "Was this then," says Mr. Justice Williams, "such a clear case of negligence as to justify the court in declaring it such as a matter of law? Was negligence the only and necessary inference from the facts? If no other possible inference can be drawn from them, it was the duty of the court to declare, as a matter of law, that the deceased was guilty of negligence. But if any other inference could be drawn from them, depending on the view which might be taken of them, then the evidence ought to have been submitted to the jury. The deceased, as we have seen, immedi-

*North Penn. R. Co. *v.* Heileman, 49 Pa. 60; Pennsylvania R. Co. *v.* Beale, 73 Pa. 504; Reading & Columbia R. Co. *v.* Ritchie, 102 Pa. 425.

†Gould *v.* McKenna, 86 Pa. 297, 303. "What constitutes negligence, in a particular case, we have frequently said is, in general, a question for the jury. The veracity of the witnesses; the conflict in the evidence; the reasonable doubt as to the facts tending to prove negligence. or as to the just inference to be drawn therefrom, and the varying standard of duty, according to the particular circumstances proven at the trial, are matters which, taken together or separately, cause the question, generally, to be one, under proper instructions, for the consideration of the jury." Clark, J. Somerset & Cambria R. Co. *v.* Galbraith, 109 Pa. 32, 39. "The law is well settled that what is and what is not negligence in a particular case is generally a question for the jury and not for the court. It is always a question for the jury when the measure of duty is ordinary and reasonable care." West Chester & Phila. R. Co.. *v.* McElwee, 67 Pa. 311, 315; Shaffer *v.* Haish, 110 Pa. 575; McKee *v.* Bidwell, 74 Pa. 218, 223; Mullan *v.* Phila. & Southern Mail S. Co., 78 Pa. 25, 32; Phila., Wil. & B. R. Co. *v.* Stinger, 78 Pa. 219, 226; North Penn. R. Co. *v.* Kirk, 90 Pa. 15; McCully *v.* Clarke, 40 Pa. 399; Baker *v.* Fehr, 97 Pa. 70, 72; Thirteenth & Fifteenth St. Pass. R. Co. *v.* Boudrou, 92 Pa. 475, 481; Am. Steamship Co. *v.* Landreth, 108 Pa. 264; Schum *v.* Pennsylvania R. Co., 107 Pa. 8. In the foregoing case of Shaffer *v.* Haish, the plaintiff was guilty of contributory negligence and could not recover.

ately before the accident had passed over the trap doors, when they were closed, in safety. Had he any reason for supposing that they had been opened while he was gathering up an armful of waste? And if not was it negligence on his part if he did not stop and look before he came to the hatchway? Would he readily have seen the open hatchway with an armful of waste? Would it not depend upon the bulk and the manner in which he was carrying it? Might it not have been so held that the open trap-door did not come within the line of his vision? And if so, was there any negligence in his not seeing that it was open? If these, and other questions which might be asked, are susceptible of more than one answer, according to the view taken of the facts, then the case ought to have been submitted to the jury. Whenever there is any doubt as to the facts it is the province of the jury to determine not only what they are, but what are the proper inferences to be drawn from them. Without intending to intimate what the finding of the jury should be, we are clearly of the opinion that the court erred in withholding the case from them, and ordering a judgment of nonsuit."

184. Though an injured employe must show a clear case of negligence by his employer, and that he is not in any way negligent himself, there are times when the degree of care which he must ordinarily exercise may be lessened without subjecting himself to the charge of negligence. Thus, when an employe is hurried by his employer, by excited language, or by such conduct as to disturb him in his usual method of working, and an accident results, the employer cannot defend that it was caused by the employe's negligence. In such a case the employe should not be nonsuited, and the question of negligence should be left to the jury.*

185. In proving contributory negligence the employer may show that the employe injured was warned to avoid the place of danger, and that he himself had conveyed the warning to others (Lehigh Valley R. Co. *v.* Jones, 86 Pa. 432). And if the evidence of the injured employe on cross-examination, establishes his contributory negligence a nonsuit may be granted (Pennsylvania R. Co. *v.* Beale, 73 Pa. 504; Butler *v.* Gettysburg & Harrisburg R. Co., 126 Pa. 160).

186. One of the negligent acts ascribed to employes is their failure to notify their employers of defects in the tools or machinery which they are using. Whenever they are careless in this regard and an accident happens they are deemed negligent, because their employers must largely depend on them for information concerning the condition of the tools, appliances or materials they use. Thus, in Mansfield Coal & Coke Co. *v.* McEnery (91 Pa. 194), Mr. Justice Paxson said:

* Lee *v.* Woolsey, 109 Pa. 124. In this case Trunkey, J., remarked, "that it would be most unreasonable to demand of him the thought and care which might be exacted when there is more time for observation and deliberation."

"Where an employe has knowledge of machinery being defective and dangerous, and in the course of his employment continues to use it without notifying his employer of such defect, and asking him to repair, he voluntarily accepts the risk and cannot, in case of injury from such cause, recover damage therefor." In this case an employe lost his life in passing over a bridge which he knew was dangerous. In reviewing the facts the justice said: "It remains but to apply these well-settled principles of law. It was not a controverted fact that John McEnery, the deceased, had been using this bridge constantly for some months prior to his death; that he drove a mule team of loaded coal cars over it daily, if not several times each day. The plaintiffs proved that the bridge was in an exceedingly dangerous condition; that it swayed from side to side as the teams passed over it, so that the horses could scarcely keep their feet. The unsafe condition of the bridge, therefore, was patent; it must have been known to the deceased; it could not have been otherwise; yet with such knowledge he voluntarily continued in the service, and gave no notice to his employers of its dangerous condition, nor did he make any protest against being subjected to such perils. If the plaintiff's testimony be true, and we must assume it for the purposes of this point, by their own showing, John McEnery, the deceased, was guilty of gross negligence in exposing himself upon such a structure, and took upon himself the risk of injury from such cause."

187. The employe's duty to give notice, says Mr. Justice Paxson, "has been so far modified as to hold that a servant does not by remaining in his master's employ, with knowledge of defects in the machinery he is obliged to use, assume the risks attendant on the use of such machinery, if he has notified his employer of such defects, or protested against them, in such a way as to induce a confidence that they will be remedied" (Mansfield Coal & Coke Co. *v.* McEnery, 91 Pa. 194, citing Whart. on Neg. § 221, citing Kroy *v.* Chicago, R. I. & P. R. Co., 32 Iowa 357; Greenleaf *v.* Dubuque & Sioux City R. Co. 33 Iowa 52; Snow *v.* Housatanic R. Co., 8 Allen 441).

188. Again, if an employer furnishes defective machinery and an accident occurs which so suddenly places the employe in a position of such imminent peril that he has not sufficient time for reflection, and in endeavoring to save the machinery commits an error without which he would not have sustained injury, he cannot be charged with contributory negligence (Schall *v.* Cole, 107 Pa. 1). In Schall *v.* Cole the plaintiff was injured while operating a planing machine. "The testimony tended to show," said Mr. Justice Sterrett, "that plaintiff unexpectedly found himself in a position of peril, caused by the breaking of the governor belt and the consequent 'running away' of the engine. If the jury found, as they doubtless did, that such was the case, and that it resulted not from any default of the plaintiff him-

self, but from the negligence of defendant, it would have been most unreasonable to hold plaintiff to the exercise of such deliberate judgment as should have controlled his action under other circumstances. That his position was one of imminent danger, in which there was no time for reflection, is clearly shown by the fact that other employes were fleeing therefrom while he was endeavoring to prevent the destruction of his employer's machinery. As was well said by the learned judge in that part of his charge complained of, in the ninth specification, 'assuming it to be true that he might have escaped had he not paused to look after his machine, such an error of judgment at such a time, ought not to prevent a recovery.'" The remark of Mr. Justice Gordon in Brown *v.* French (14 W. N. Cas. 412), may be added: "No one can be charged with carelessness when he does that which his judgment approves, or where he omits to do that of which he has no time to judge. Such act or omission, if faulty, may be called a mistake but not carelessness."

189. Another modification was declared by Mr. Justice Gordon in Patterson's case (Patterson *v.* Pittsburgh & Connellsville R. Co., 76 Pa. 389, 393), "If the instrumentality by which [an employe] is required to perform his service, is so obviously and immediately dangerous, that a man of common prudence would refuse to use it, the master cannot be held liable for the resulting damage. In such case the law adjudges the servant guilty of concurrent negligence, and will refuse him that aid to which he otherwise would be entitled." And, Mr. Justice Clark has said (Somerset & Cambria R. Co. *v.* Galbraith, 109 Pa. 32, 39): "There are cases, it is true, when the facts are admitted or undisputed and the standard of duty is determinate, in which it is the duty of the court to declare upon the question of negligence, as matter of law. A servant cannot recover where, from neglect of known duty, or want of care on his own part, he has contributed to the injury, if he recklessly or needlessly expose himself to danger, or by disregard of his duty to his employer, inflicts injury upon himself he must accept the consequences of his own act. This is a propositon so plain, and so well established, that a reference to authorities in support of it is unnecessary."

190. If an employe is an inspector and is injured by a defect which he ought to have discovered had he faithfully executed his duty, he is chargeable with contributory negligence and cannot recover. Thus Butler (Cooper, Hewitt & Co. *v.* Butler, 103 Pa. 412), an inspector, was injured by a defect in a tramway which he was required to inspect. Had he performed his duty faithfully doubtless he would have discovered the defect. Said Mr. Justice Clark, in reviewing the case: "If one of the peculiar and distinctive duties of the plaintiff, under the terms of his employment, was the inspection and examination of the track, for which he was to receive a larger compensation than he

otherwise would, his failure to perform that duty was negligence, and in case of injury or loss to the defendants, by reason of a defect which the plaintiff might easily have discovered, he would be answerable in damages for his default. A corporation or company engaged in an extensive and complicated management, must necessarily delegate the performance of specific portions of the work to individuals, and whilst in some cases the corporation or company is responsible for the correct exercise of these duties by the agents to whom their performance is delegated, yet the responsibility of the agent in case of negligence has never been doubted, indeed, it is his negligence imputed to the employer that creates the liability of the latter. If all the facts assumed in the point were established, the injury resulted from the plaintiff's own default and negligence, in a matter which the company was of necessity obliged to commit to some one, and which was in fact committed to him, and why should he complain of the company when the default was his own?"

191. We shall now describe the other cases in the decision of which the contributory negligence of the employe has formed an element. The first that may be mentioned is Rickert *v* Stephens (133 Pa. 538). The employe was killed by a descending box used in a slate quarry for the removal of rubbish. It was raised and lowered by a derrick which was worked by steam power. President Judge Schuyler, of the court of common pleas, who nonsuited the case, said: "On the occasion in question the signal to change the snap-jack was given by the deceased, who, as soon as it was given, walked to the very spot where he met his death, and was busy with his work when the box came down upon him. He knew the box was descending, or about to descend; he knew he was entitled to no notice of its descent; he could not tell exactly where it would descend, and yet he goes on about his work without looking out for the box, and apparently without a thought of the impending danger." The supreme court approved the judgment declaring, "we are of the opinion that the death of the deceased was the result of his own negligence."

192. In Honor *v.* Albrighton (93 Pa. 475), a boy thirteen years old was employed as a slate-picker in a coal breaker. Another boy, who was attending the machinery, asked him to bring the oil-can. He left his post, and in taking the can fell into a pair of rollers for breaking coal and was severely injured. It appeared that the rollers were covered with a box, on the top of which was an opening covered by a plank which was displaced at the time of the accident, and was so often before with the knowledge of the injured boy. It was decided that the provision in the act of March 3, 1870, that all machinery where boys work shall be properly "fenced off" was intended to mean properly protected, and that in providing this cover for the rollers the employer did his whole duty under the act. It was also decided that

if the cover was unnecessarily removed without the fault or knowledge of the employer, through the negligence of one of the employes, there could be no recovery, and furthermore, that the boy was negligent himself.

193. In McDonald *v.* Rockhill Iron & Coal Co. (135 Pa. 1), the plaintiff, who was a miner of coal, was injured while at work in the defendant's mines. His injury was received while attempting to cross the bottom of a shaft through which the coal was taken from the mine to the surface. The shaft was provided with two cages, in one of which the coal was lifted up in cars, while at the same time an empty car descended in the other. There was a manway opened around the shaft through which the men sometimes passed, but more frequently most of them passed directly through it, either under the cages if they were elevated, or over them if they were at the bottom. The plaintiff alleging that the track of the manway was obstructed with ice on this occasion, attempted to cross the shaft underneath the cage, which was not at the bottom at the time. He stepped into the sump, which was a depression of the surface about a foot to eighteen inches deep, at the bottom of the shaft, and was struck at the instant he did so by a descending cage, and for the injury thus received he sought to recover. The defendant, on the trial, asked for a binding instruction that the plaintiff, on his own testimony, was guilty of contributory negligence. In reviewing the case, Mr. Justice Green remarked: "When the plaintiff arrived at the foot of the shaft the work of the day had commenced and the cages were running in their accustomed manner up and down the shaft. The plaintiff knew well what that manner was. He knew that they moved rapidly up and down. If he had been in doubt as to their being in operation, he could have ascertained the fact in an instant by simply inquiring of either of the drivers, who stood close by, or by calling up the shaft to the man at the top. He did neither. He could easily have seen up the shaft, and discovered the situation of the cages if he had chosen to do so, but he did not. * * That place was one of manifest, conspicuous danger. It had that character as a necessary consequence from the use of the shaft and the cages, which was perfectly well known to the plaintiff. But, in addition to that, one of his witnesses testified positively, directly and affirmatively to the fact of the danger. Notwithstanding all this the plaintiff stepped directly into this place, knowing that the cages were above him, without taking the slightest precaution for his safety. He made no inquiry of the drivers. * * He knew it was the time of day for the cages to be in motion, and in point of fact they were in motion, and he knew that he was in danger of death if he was struck, yet he walked deliberately into this death-trap with his eyes open and in the full possession of his faculties. The question of his culpable and contributory negligence was not an open one. It

was a necessary legal conclusion, from his own acts and omissions, proved by himself and his witnesses, not in the least controverted by any one. * * * We think the defendant's first point should have been affirmed and the jury directed to find a verdict for the defendant."

194. In Reading Iron Works *v.* Devine (109 Pa. 246), an employe was killed by the falling of a timber. He had been notified, however, of its condition. He was operating a steam hammer, which, when in operation, jarred things considerably and caused the timber to fall off and kill Devine. Mr. Justice Gordon, in reviewing the case, said: "In the testimony we have a corroboration, by a witness of the plaintiff's, of that part of the evidence of Kerr, the defendant's foreman, wherein he alleges that he gave Devine special instructions 'to see that everything on top was made fast, knowing the danger that would result.' As Moyer says: 'He was to look after that everything was right.' Taking this evidence in connection with the fact that, without such instruction, it was his business to see that the hammer was in all particulars safe and in good working order before he started it, and the inference is irresistable that the accident from which he suffered was due to his own neglect. Thus, *quacunque via data;* whether we regard Devine as engaged with those who did the defective work, or as wanting in proper care in the discharge of his duty, the company cannot be charged with the results of this lamentable accident. In other words, the court should have affirmed the defendant's fourth point, 'that under all the evidence in the case the verdict must be for the defendant.'"

195. If a father retains his son in an employment which he knows is dangerous, and without objection, he is chargeable with contributory negligence (Schwenk *v.* Kehler, 122 Pa. 67).

196. In Lehigh Valley R. Co. *v.* Greiner (113 Pa. 600), an employe while riding from his work on a train composed of the engine, tender, and a gondola car having plank seats, sat on the narrow platform in the rear end of the tender, with his legs and feet hanging over the edge. He had been warned that this was a dangerous place to ride, but gave no heed to the warning. While he was thus sitting an engine ran into the gondola, raising it up and pushing it forward so that the bumpers struck him, and he died from the injury. It was held, in an action by his widow and minor children, that they could not recover anything for his death, because he had been guilty of contributory neglience (See also Railroad Co. *v.* Jones, 95 U. S. 439).

197. In the case of the Pennsylvania R. Co. *v.* Zink (126 Pa. 288), the widow of an employe sued to recover for the death of her husband. It appeared that he had been a brakeman for several years, and was directed to take a train of platform cars loaded with lumber and pushed by an engine in the rear, to some other cars on a siding three hundred yards distant. The siding was straight and up grade. He

put his left foot into the iron stirrup at the right hand side of the front end of the front car, his right foot on the bumper, and one of his arms over the side of the box of the car, and rode in that position until the front car became derailed, when the front end veered to the right, caught him between a board pile and the car and so injured him that he died. This was one of a series of piles quite close together, beginning about twenty feet from where he took charge of the train, and at a distance from the side of the car variously estimated at from twenty to forty inches. The derailment was alleged to have been due to rotten ties, but this was disputed. He could have ridden on the bumper of the car, which did not strike the board pile. There was evidence that he could not use the brake or signal the engineer from where he was riding. On these facts the court below properly refused to charge that he was guilty of contributory negligence in taking the position on the car above described, and properly submitted the question of the company's negligence and the employe's contributory negligence to the jury. The supreme court, in reviewing the case, said: "We do not think that the position of Brakeman Zink on the car at the time of the accident shows contributory negligence on his part; at least we cannot declare it so, as a question of law; it was for the jury. He was riding as he had often done before: as he had seen others do repeatedly; there was abundant room between him and the lumber piles, and he had no reason to suppose, he certainly was not bound to anticipate, that the car would become derailed just at that point, and that as the result thereof he would be crushed and killed between the car and the pile of lumber. Nor do we think he was bound to know the unsafe condition of the track. It was not in the line of his duty to see to the track, nor was the defect so palpable that it must have been seen and known by him, as was the bridge in Mansfield Coal & Coke Company *v.* McEnery (91 Pa. 185)." In Fair *v.* Pennsylvania R. Co. (14 At. Rep. 236), a brakeman was climbing up a freight car when it was in motion to adjust the brake. The steps on the side of the car were in good condition, but the hand-hold on the top was gone and a spike had been driven in its place. He reached over the top to obtain a hold, but, not securing it, fell backwards and was killed. The court declared that there was nothing in the case which tended to establish the liability of the defendant for the accident. "It does not by any means follow that the result would not have been the same had there been a proper hand-hold on the top of the car. The steps or brass on the end of the car were good, and until he let go of them he was safe enough; but, if he did so let go before he was sure of a secure grip on the top of the car, the fault was his own. That this may have been the case is obvious enough. Hence, as there was no direct evidence that the accident was the immediate result of the defendant's negligence, the plaintiff was properly nonsuited." In Kelly

v. Baltimore & Ohio R. Co. (11 At. Rep. 659), a brakeman was injured when descending from a car. The risk to which he was exposed was obvious and might have been avoided by exercising proper attention. He failed to recover.

198. In Pennsylvania R. Co. *v.* Mooney (126 Pa. 244), an employe, while going to his work on the road, was killed while attempting to cross the track. From the evidence it did not clearly appear how he was attempting to do this, but he was at a public crossing. Mr. Justice Green said: "It matters but little, however, whether Mooney was crossing the highway lengthwise and between the rails of the track, or crossing the rails and between the rails in the highway at the moment he was struck. He was on the track or he would not have been struck. If he was crossing the highway he was a trespasser and there could be no recovery, and if he was crossing the track he was guilty of most manifest contributory negligence in stepping upon the track immediately in front of an approaching engine. We have passed decisively upon these facts in a number of our recent decisions. In Carroll *v.* Penn. R. Co. (12 W. N. Cas. 348), we held there could be no recovery, although the plaintiff testified that before he stepped upon the track he stopped and looked and listened but neither saw nor heard the approaching train. We said: 'The injury sustained by the plaintiff was attributable solely to his own gross carelessness. It is in vain for a man to say that he looked and listened if in desspite of what his eyes and ears must have told him he walked directly in front of a moving locomotive.' Similar cases are Monongahela City *v.* Fischer (111 Pa. 9); Mulherrin *v.* Del., Lack. & W. R. Co. (81 Pa. 366); Moore *v.* Phila., Wil. & B. R. Co. (108 Pa. 349); Baltimore & Ohio R. Co. *v.* Schwindling (101 Pa. 258); Pennsylvania R. Co. *v.* Bell (122 Pa. 58). In the present case there was no proof that Mooney stopped, looked or listened before stepping upon the track. In this respect the plaintiff's case has nothing to sustain it but the presumption that the plaintiff performed his legal duty of stopping, looking and listening, but that presumption, slight and faint at the best, in this class of cases, is completely overborne by the affirmative proof to the contrary that he was struck the moment he set foot on the track. It is impossible that he could have looked and listened when the indisputable fact is that he stepped on the track immediately in front of an approaching locomotive. In the very recent case of Marland *v.* Pittsburgh & Lake Erie R. Co. (123 Pa. 487), we said: 'On the trial of this case the plaintiff testified that he stepped upon the track and was instantly struck and injured. It is true he said he looked up and down the track and saw nothing, but it is necessarily true also that if he made use of his eyesight he must have seen the approaching train. He could not possibly look along the track in

the direction of the approaching train and fail to see it, since his presence on the track and the collision were simultaneous.'"*

199. In Payne *v.* Reese (100 Pa. 301), the owners of a colliery conducted the blow pipe from their boiler underneath a narrow track, terminating in a wooden box open at one end and buried under the track about twenty inches below the surface. The constant action of the steam loosened the soil and caused a hole or excavation above the box. The track in question was the ordinary path of the miners in the employ of the colliery in going to and returning from their work, but none of them knew of the existence of the blow pipe. In an action against the owners of the colliery for injuries sustained by a miner who fell into the hole, it was decided that the question of the defendant's negligence was for the jury, and that it was error on the part of the court to assume it. It appeared that the plaintiff at the time of the accident was walking along the track with other miners, and several of them, perceiving steam escaping from a point in the track above the box, stepped aside to escape injury. The plaintiff, however, kept on his way, fell into the hole, and was injured. The defendants requested the court to charge that if the steam was issuing from the ground at the place where the plaintiff was injured, and he saw it and went into it, he was, in law, guilty of such contributory negligence as precluded a recovery. The court declined to charge in this manner, but the supreme court declared that such an instruction was proper. In reviewing the case, Mr. Justice Gordon said: "If he was a man of ordinary sense, he must have known that something was wrong, and that there might be danger, though he could not discern the particular character of that danger. That he did thus imperil the safety of his own person, is very clearly established by the testimony of the defense, and this fact seems also to be confirmed by the circumstances of the case; nevertheless the question is one for the jury, and to that body, under proper instructions, it must be submitted." McClafferty's case (McClafferty *v* Fisher, 3 East. Rep. 402), may be properly described here. He was an experienced oil miner, yet he approached a gas well with a lighted lantern. The gas ignited from his lantern and caused an explosion which resulted fatally to him. He was regarded negligent, and his widow failed to recover.

200. In Kaiser *v.* Flaccus (138 Pa. 332), the injured employe stood in a place near a machine where he ought not and was injured, he could not, therefore, recover. In Stoll *v.* Hoopes (14 At. Rep. 658), an employe's hand was drawn into a machine and severed, when he was cleaning it. Had he stopped the machine before performing this operation, as he had authority to do, and often had done, no accident would have happened. He was regarded negligent and could not recover.

*Keyes *v.* Pennsylvania R. Co., 3 At. Rep. 15.

201. In another case (O'Keefe *v.* Thorn, 16 At. Rep. 737), a boy was employed in a tin-shingle factory for the purpose of pushing pieces of tin under a stamping-machine. On the second day of his employment his hand was caught under the machine and injured. Nevertheless, he could not recover because the machine was not dangerous when properly used, and its character was as obvious to a boy as to an older person. The court said: "He could see that if he placed his hand under the stamp that it would be crushed. If boys are not allowed to use machinery until they have become accustomed to its use, it would be difficult for them to learn any useful trade or occupation by which to earn a livelihood."

202. In Galbraith's case a conductor of a freight train was subject to a rule of the company which directed him to take his position in the middle of the train when it was going down grade so as to be able properly to direct the brakemen. Just as the train started down a slight grade of about a mile in length, he went forward to the engine and told the engineer to "run slow and look for the iron company's engines; they are liable to come outside their limits." The train was running at the time under a special order to look out for the iron company's engines at a point some distance beyond. While giving this direction to the engineer, and receiving his answer the engine and some of the cars were thrown from the track, owing to a defect in the road-bed, and the conductor was killed. If he had remained in the middle of the train he would probably have been uninjured. In reviewing the case Mr. Justice Clark said: "If Galbraith therefore, as an employe of the company, negligently left the post of duty assigned to him under the rules and regulations of the company, where he would have received no injury, went upon the engine where his duty did not call him, thereby lost control of his train, and thus contributed to the injury which caused his death, the duty of the court would be plain; such a course of conduct would undoubtedly constitute negligence, and there could be no recovery in this case. But we cannot assume all these facts; Galbraith was the conductor of the train, he was bound to exercise in the interest of his employer all due care and caution. If he knew of any obstruction on the track, or had reason to expect any, it was his clear duty to guard against it. 'The conductor,' as Sanner, the witness, says, 'is held responsible for the safe transport of his train, and that requires of him, in cases of this kind, to use judgment.' His duty under the general rules of the company, 'in all cases of doubt' was to take 'the safe side'; and what is the safe side in any given exigency is, of course, a question for the exercise of judgment. He had, it is true, certain orders from the company under the general regulations, one of which was that he should remain in the middle of the train to command the crew, in regulating the speed on descending grades. He was held, of course,

to the reasonable observance of all these rules, but he had a general duty and discretion to exercise in an emergency. His duty varied according to the circumstances. Unless some exigency calls him away he must remain at his post whilst the train is on a descending grade, but he must necessarily be allowed some latitude in the exercise of judgment for the safety of his train. When Galbraith came upon the engine he said to Sypher, the engineer, 'look out, run slow and look out for the Cambria Iron Company's engines, they are liable, sometimes, to come outside of their limits.' He made no other communication, and an inference may be drawn that this was the object of his errand. If the fact were known to him that the engines of the Cambria Company at times exceeded their bounds, it was his plain duty to exercise a reasonable precaution against a collision with them; if they had on previous occasions exceeded the limit, they might do so again. The train was running under special order No. 4, with instructions to flag against these engines between the first bridge west of Johnstown and Johnstown only, but if there was any probability of an obstruction not known to or considered by the company in making that order, it was his duty to guard against it, and he was privileged to walk on all parts of the train for that purpose. Thus whilst his duty, under general orders were, on a descending grade, to be in the middle of the train, he was liable in an exigency to be called elsewhere" (Somerset & Cambria R. Co. *v.* Galbraith, 109 Pa. 32). Again in Wert *v.* Keim (13 At. Rep. 548), an engineer ran his train over a switch from one track to another at the speed of fifteen to twenty miles an hour in a dense fog. He made no inquiry to ascertain whether the second track was clear, and his engine collided with another which had been sent out as a pilot and he was seriously injured. As he was deemed guilty of contributory negligence he failed to recover.*

203. Sometimes a person performs a service and claims the protection of a passenger. Thus in Myers' case against the Cumberland Valley R. Co. (55 Pa. 288), a conductor of a private freight car, not in employ of a railroad company, at the request of the company's conductor of the train, cut loose the cars following his own, fell off the train and was injured. The court charged that if the injury was not caused by drawing the bolt, but by the negligence or misconduct of the engineer in increasing the motion of the cars with a violent, unnecessary and unusual jerk, after the plaintiff had resumed his

*On one occasion an employe was repairing his employer's ice house and while engaged at his work knowingly exposed himself to a current of ammonia. By continuing in his employment with knowledge that the room was full of ammonia he assumed the consequences, Beittenmiller *v.* Bergner & Engle Brewing Co., 22 W. N. Cas. 33. On another a deck-hand was sent on shore before daylight to cut the ropes which held the boat. He cut the last one inside the knot, by which it was fastened to a tree, which caused the rope to unwind rapidly and strike his leg with so much force as to break it. It was decided he was injured by his own negligence, and therefore, could not recover, Brown *v.* Wood, 16 At. Rep. 42.

proper position on the car, such as he could not anticipate and guard against, he might recover. This instruction was declared to be not erroneous. The plaintiff, after performing the duty he voluntarily undertook, having resumed his proper place as a passenger, was entitled to the protection which such relation gave him. Said the court: "Myers was requested by the conductor of the train to cut loose Bryson's cars at his station, by drawing the coupling bolt. The engineer slackened the speed of the train, and after drawing the bolt Myers stepped to the side of the car with it in his hand and held it out, showing it to the engineer to let him see the cars had been cut off. The engineer, who was proven to be a quick, impulsive and somewhat reckless man, suddenly let on steam, started the train with a violent jerk into quick motion, which threw Myers off upon the track, where he was overtaken and badly injured by the cars following up by their own speed. Clearly it was a question of fact for the jury to decide whether Myers at this time had fully accomplished the special duty he had undertaken to perform and had resumed his position upon the platform of his own car, and whether being in this position his being thrown off and injured was caused by the negligent act or misconduct of the engineer. Assuming, according to the former opinion, that Myers took upon himself the risk of the act he undertook to perform, there is nothing in his case demanding him to be held to very strict presumptions. He did an act of mere accommodation at the request of the conductor without hire or reward, and as soon as he had performed it and resumed his proper position as a passenger on the train he became entitled to the protection which such a relation gave him, and a jury would not be called on to discriminate against him with an unfriendly eye. If satisfied upon the evidence that the injury was caused by the misconduct of the engineer after he had substantially performed the duty and resumed his position, the railroad company and not he should suffer for the mismanagement of the train by their own employe."

204. Attempts have been made, several times, to establish the doctrine of comparative negligence, whereby the right to recovery depends on the degree or extent of negligence which each party may have committed. This doctrine, first declared in Illinois, has never found any friends among Pennsylvania judges. In Armstrong's case (Catawissa R. Co. *v.* Armstrong, 49 Pa. 186, 193), which was decided in 1865, Mr. Justice Thompson said: "We have repudiated, oftentimes, attempts to draw the line between contributing acts of negligence in fixing their consequences, and have always held that in such cases neither party can recover from the other. This is the rule of the common law, as old as the common law itself, and rests on the solid reason that one man has no right to recover from another for consequences attributable in part to his own wrong. In Little

Schuylkill Nav. R. & Coal Co. *v.* Norton, 24 Pa. 465, the chief justice of this court most forcibly presented the true doctrine when he said "the law has no scales to determine in such cases whose wrongdoing weighed most in the compound that occasioned the mischief.'"*

205. More recently another attempt was made (Monongahela City *v.* Fischer, 111 Pa. 9) to establish the doctine, though perhaps slightly modified. The injured person sought to recover if his negligence did not "contribute in a material degree to the accident." But Mr. Justice Paxson made short work of the contention. "Without referring to the cases, the doctrine of this court has always been that if the negligence of the party contributed in any degree to the injury he cannot recover. This is a safe rule, easily understood, and cannot well be frittered away by the jury. But if we substitute the word 'material' for the word 'any' we practically abolish the rule, for a jury can always find a way to avoid it. The rule itself is valuable and rests upon sound principles. We are not disposed to allow it to be undermined."†

206. Thus the rule remains that if the person has contributed "in any degree" to his accident he cannot recover, however great may have been the negligence of the employer. The chief justice has tersely given the reason for adhering to it. It is feared that if juries were permitted to enter into this field of investigation too often they would discover that the employer had committed far more negligence than the employe. Is not this fear the great obstacle in the way of introducing this obviously just principle, and if so, cannot a constitutional and safe method be found of applying it in those cases in which both parties have been negligent? Could not juries be trusted to find all the facts in such a case, and on their finding the court be endowed with authority to determine what judgment should be rendered?

207. Sometimes the employer has defended on the ground that the

* But see Lockhart *v.* Licktenthaler, 46 Pa. 151 and, McGrew *v.* Stone, 53 Pa. 436.

† In Oil City Fuel Supply Co. *v.* Boundy (15 At. Rep. 865) Mr. Justice Hand remarked: "The rule is that any degree of negligence on the part of the plaintiff contributing to the injury destroys his right to recover. * * * It is safe and easy of application by the jury. It is the kind of action, not the quantity, on the part of the plaintiff which prevents the law from measuring between plaintiff and defendant their respective degrees of negligence when the former comes into a court of justice."

In City of Chicago *v.* Leseth, a case recently tried by the Appellate Court of Illinois, in which the jury returned a verdict for $20,000, Judge Moran remarked: "There is a noticable tendency to large verdicts in injury cases in this country within the last three or four years which should be checked, and judgment kept within modern limits. Large damages in such cases are the result of the sympathy which judge and jurors, in common with the majority of men, feel with the pain and suffering of the victims of such accidents. The limit of compensation for any actual pecuniary loss, such as loss of time, deprivation of ability to earn a livelihood, and necessary expenses incurred, is greatly exceeded, in a vain attempt to measure pain and suffering and balance it with a reward of money. Here the field of absolute conjecture is entered, and with no rule to guide the judgment, the verdict is reached, by pure and very frequently by most generous guessing. The tendency to gross verdicts is such that if it does not receive a check, the bankruptcy of corporations liable in this class of cases must follow."

injured employe was in the service of an independent contractor to whom he must look for relief. Who, then, is an independent contractor? This is the final inquiry.

208. In Smith *v.* Simons (103 Pa. 32.), the court declared that where one who contracts to perform a lawful service for another is independent of his employer in all that pertains to the execution of the work, and is subordinate only in effecting a result in accordance with the employer's design, he is an independent contractor; and in such case the contractor alone, and not the employer, is liable for damages caused by the contractor's negligence in the execution of the work (Edmundson *v.* Pittsburgh, N. Y. R. Co., 111 Pa. 316). In Reynolds *v.* Braithwaite (25 W. N. Cas. 269, 271), the court said: "It is a well settled general rule that a party who has contracted for the doing of certain work for his use and benefit is not liable for injuries arising in the performance of such work, and this rule rests upon the ground that a contractor, as between him and his employer, is responsible only for the fulfilment of his agreement, and pending the performance of the work is to a certain extent substituted for the party for whom the work is to be performed. In the application of this rule to the cases the decisions are apparently conflicting; but it may be regarded as settled that if the employer keeps control of the whole of the work, his liability for the acts of a contractor and servant is the same."*

209. In Harrison *v.* Collins (86 Pa. 153), which perhaps is the most important of all the cases on the subject, Mr. Justice Mercur said: "If one renders service in the course of an occupation representing the will of his employer only as to the result of his work, and not as to the means by which it is accomplished, it is an independent employment," and the payment of the contractor by the day does not effect the independent character of his employment. But a blacksmith, who should be employed to perform a particular service, and who should be subjected to his employer's directions, would not be an independent contractor, for whose negligence his employer could escape responsibility.† Nor is a person who contracts with a railroad company to move its cars on a part of its track by horse power, in the ordinary business of the company, and who employs drivers and teams for that purpose an independent contractor.‡ The mere question of the power by which its cars are moved is of no consequence.

210. In Painter *v.* Mayor, etc., of Pittsburgh (46 Pa. 213, 221), Mr. Justice Strong said: "It is now settled in [England] that defendants not personally interfering or giving directions respecting the progress

*See also Berberich *v.* Ebach, 25 W. N. Cas. 272.
†Dickson *v.* Hollister, 123 Pa. 421.
‡Phila., Wil. & Balt. R. Co. *v.* Hahn, 12 At. Rep. 497.

of a work, but contracting with a third person to do it, are not responsible for a wrongful act done, or negligence in the performance of the contract, if the act agreed to be done is legal.* Such is the doctrine of Rapson *v.* Cubitt (9 Mees. & Wels. 710; Readle *v.* The London & Northeastern R. Co., 4 Exch. 243; Overton *v.* Freeman, 8 Eng. Law & Eq. 479; Peachey *v.* Rowland, 16 Eng. Law & Eq. 442, and numerous other English cases. In Gray & Wife *v.* Hubble, 7 Pullen, decided in the Queen's Bench, April 16, 1863, Law Journal reports, vol. 32, part 8, N. S., Chief Justice Cockburn asserts it to be the common doctrine, that 'if a person in the exercise of his rights as a private individual, or of those conferred upon him by statute, employs a contractor to do work, and the latter is guilty of negligence in doing it, the contractor, and not the employer is liable. Similar opinions were expressed by all the judges.'"

211. Neverthless, says Mr. Justice McCollum, "the master owes to the servant the duty of providing a reasonably safe place to work in, and reasonably safe appliances with which to do the work; and the delegation of this duty to an agent or an independent contractor will not relieve the master from responsibility for an injury to the servant resulting from its neglect" (Trainor *v.* Phila. & Reading R. Co., 137 Pa. 148, 159).

212. If one employs a contractor to erect a building, he is the principal of the employes and they must inquire into his character for skilfulness and carefulness; the employer of the contractor is not a guarantor for his skill and care (Hunt *v.* Pennsylvania R. Co., 51 Pa. 475).

213. In Harrison *v.* Collins (86 Pa. 153) the owner of a sugar refinery employed a master rigger to remove some heavy machinery from a railroad train to his refinery. In the prosecution of the work he opened a coal-hole in the pavement which remained open a few minutes after the completion of the purpose for which it was opened. During the interval, a lad walked into it and was severely injured. The owner of the refinery did not interfere in any manner with the work, and the entire direction of it was under the control of the rigger, who was paid by the day. It was decided that the refiner was not liable, and that the owner would not be liable for such an unauthorized uncovering of the hole until such time had elapsed, under all the circumstances, that a reasonable and prudent man ought to have discovered its dangerous condition.†

214. A natural gas company is not liable for injuries resulting from the negligence of an independent contractor in the laying of its

* "Persons not personally interfering with or directing the progress of a work, but contracting with third parties to do it, are not responsible for a wrongful act done, or for negligence in the performance of the contract, if the act agreed to be done be lawful.—Gordon, J., Wray *v.* Evans, 80 Pa. 103, 105.

† Whether an operative, who was employed by a roller boss, was working for an independent contractor.—See Rummell *v.* Dilworth, 111 Pa. 343, 346.

lines unless it accepted work which it knew, or ought to have known, was so negligently done as to be unsafe and dangerous. In reviewing the case in which this question arose, Mr. Justice Sterrett said: "In my judgment it is to be regretted that corporations, such as plaintiff in error, invested with the right of appropriating private property and entering upon public highways for the purpose of laying pipes in which to transport and distribute one of the most dangerous natural agencies in existence, should be permitte l to relieve themselves of the duties and responsibilities incident to the business, by letting part of the work, requiring the highest degree of care, to an independent contractor; but the law on this subject has been too firmly settled to admit of any doubt, and must therefore be administered as we find it" (Chartiers Valley Gas Co. *v.* Lynch., 118 Pa. 362, 372).

215. A steamship company made a special contract with a stevedore to unload and load its vessels at New Orleans. Neither the master of the vessel nor his crew had anything to do with the work; it was in the exclusive charge of the stevedore, who employed his own men and used his own machinery and cargo planks. A seaman on one of the company's steamers, who was serving as a night watchman, having stepped on one of these planks, which tilted, he was thrown overboard and seriously injured. In a suit against the company it was held that the question whether the stevedore was an agent of the company or an independent contractor, and whether the plaintiff was a fellow servant in a common employment, were properly submitted to the jury, who decided in favor of the company (Hass *v.* Phila. & Southern Mail S. Co., 88 Pa. 269).

216. In Bullock *v.* Gaffigan (100 Pa. 276) the plaintiff sued four individual defendants, whom she alleged were trading as the Beaver Brook Coal Co., to recover for the death of her husband, which was caused by defects in the machinery operated by him as their servant. On the trial it appeared that the Beaver Brook Coal Co. was a corporation of which the individual defendants were the officers, and in the employ of which the plaintiff's husband was at the time of his death. It was held that the evidence failed wholly to establish the relation of master and servant between them and the plaintiff's husband, and therefore that the jury should have been instructed to ren der a verdict for the defendants.

217. A school district employed a contractor to make repairs and improvements to the school house, under the directions of a superintendent named by the district. It was agreed that the contractor should not enter on the work until the school was dismissed for the season. The superintendent chosen by the district was the architect of the contemplated improvement, and was authorized only to direct the contractor with respect to the manner in which the work was to be executed. The contractor by permission of the superintendent

began the work before the school was dismissed, and performed it so negligently that one of the school children was injured. It appeared that two members of the school board had visited the school house after the work had been begun, but did not interfere or direct it to be stopped. In an action by the injured child against the school district to recover damages for the injury done to him, it was held that as the contractor at the time of the accident was exercising an independent employment, the school district was not liable for his negligence. Furthermore, as the superintendent had no power to alter the time when the work was to be performed, his permission to the contractor to enter thereon, before the dismissal of the school, did not bind the school district or render it liable for the contractor's negligence. Again, the mere fact that some of the members of the school board had observed the fact that work had been begun, and did not interfere or stop the same, did not in any way render the school district liable for the contractor's negligence (School District *v.* Fuess, 98 Pa. 600, 605). In reviewing the case Mr. Justice Trunkey said: "Where the purpose of the contractor is lawful, and the owner of the property may lawfully commit its improvement to others, if the owner employs a contractor to do the work and the latter is guilty of negligence in doing it, the contractor and not the employer is liable. A person is not liable for the acts of another, unless the relation of master and servant or principal and agent exists between them. When an injury is done by a party exercising an independent employment, the party employing him is not responsible to the person injured. This principle applies to municipal corporations (Painter *v.* Mayor, etc., of Pittsburgh, 46 Pa. 213). If the contractor is to perform according to the plans and under the direction of an architect, he is nowise relieved from his positive covenants to do the work; he continues to have control over the men he employs and of the mode of performing his contract, and is liable for injuries caused by his neglect (Allen *v.* Willard, 57 Pa. 374). In a contract with a city for the construction of a sewer, it was stipulated that the work should be commenced and carried on at such times and in such places and in such a manner as the engineer of the city should direct; and that was not such a reservation of power as made the city liable for an injury occasioned by the negligence of the contractor (City of Erie *v.* Caulkins, 85 Pa. 247). A contractor for the grading and paving of a street in a city, the work to be done 'under the directions and to the satisfaction of the city engineer and the committee on streets,' is responsible for an injury he does to property abutting on the street, and the city is not liable," (Reed *v.* Allegheny City, (79 Pa. 300).

218. We have now concluded our review of the judicial determinations of the liability of employers for injuries sustained by their employes during the last half century. We have seen that the courts,

though deciding at the outset that an employer was not liable for injuries sustained by an employe, caused by the negligence of a fellow employe, were not inclined to release employers from further liability of that nature. The expressions of the judges were emphatic and must have a singular sound in the ears of their successors. In that early day, too, the courts did establish a rule of duty for the employer, with respect to the selection of suitable servants, tools and machinery, safe places for executing their tasks, and the giving of proper instructions to those in need of them. We have seen how the supreme court has torn it down, little by little, until hardly anything remains, though in so doing has disregarded one of the most important principles of the common law, that the good of society requires that every contracting party shall be responsible for his negligence, and that he shall not be permitted to release himself from the duty of exercising due care in whatever he shall undertake. We have also seen that in defining a fellow servant, the supreme court has resolved almost every doubt, by including the largest possible number of servants in the definition, thus favoring the employer by diminishing his liability. Finally, we have seen that when both employed and employer are negligent, however slight may be the employe's negligence compared with that of his employer's, the latter cannot recover. Thus the courts have steadily built up for the employers a system of exemption from liability for their negligent acts, until the occasions are rare indeed in which anything can be recovered against them.

219. Admitting this to be so, are all the consequences to be deplored? What has been the outcome of this favor shown to corporations and employers by courts and legislatures? An industrial development without parallel in any state in the Union! If they have been too highly favored, let us remember that the results have not been wholly evil. Enterprises of great magnitude have rapidly multiplied which, in turn, have opened numerous avenues for employment. Let the workingman remember that if he has sometimes been unjustly denied redress for an injury sustained when working for another, his employer's escape has encouraged him to extend his undertakings, and thus to open new fields for other workers, thereby increasing the demand for labor, and either offering higher wages or arresting their decline.

220. But when everything has been said that possibly can be in favor of the exemptions that have been established for employers, must we not admit that they are beyond the true interests of society. Surely employers ought not to be released from the consequences of their own direct negligent acts to their employes, when they and all other individuals and corporations are responsible for the consequences of their negligent acts to every other class, even when they

relate only to the transportation of merchandise. In accordance, therefore, with the law under which this Bureau is created the following suggestions are presented for the consideration of the legislature.

221. It is suggested that it shall be declared by statute that an employer or his agent, superintendent or other representative shall be liable to his employe in damages for injuries received by him in consequence of the direct negligence of the employer; and an employe in like manner shall be liable to another employe; but no employer shall be liable to an employe for the injuries received by him through the negligence of a fellow employe.

Such a provision would be nothing more than a statement of the existing law.

It is suggested that it shall also be declared that it shall be the duty of an employer to select suitable servants, tools, machinery, appliances or other apparatus and also suitable materials for the use of his employes; he must also select reasonably safe places for them to pursue their employment. Any neglect by the employer, or his agent, superintendent, or other representative in any of these regards shall be deemed direct negligence.

This statement, as we have seen, is nothing more than the existing law. Neglect of employer's duty is termed direct negligence, while now it is described only in a general manner.

It is suggested that whenever an employer knows, either through information derived from his employes, inspectors, superintendents, foremen, or other persons, or from his own inspection or observation, that his employes, tools, machinery, apparatus and materials, as well as places in which his workmen are employed, are unsafe and liable to cause injury to them, he shall be held liable for the injurious consequences; and their knowledge of his negligence, or their engaging or continuing in his employment after knowing of his negligence shall not prevent them from recovering for any injury they receive in consequence of such negligent conduct by their employer.

Another suggestion is that any person, when attempting to perform a service for another which is *unusual* and *valuable*, at the request of one of his employes, and is injured while so doing, may recover damages therefor.

And lastly whenever in an action to recover damages against an employer he shall defend on the ground that his employe was also negligent, the jury shall find all the facts and on these it shall be the duty of the court to determine what damages, if any, shall be rendered.

PART II.

LEGISLATION IN OTHER STATES.

Alabama.

"When a personal injury is received by a servant or employe in the service or business of the master or employer, the master or employer is liable to answer in damages to such servant or employe, as if he were a stranger, and not engaged in such service or employment in the cases following:

"1. When the injury is caused by reason of any defect in the condition of the ways, works, machinery or plant, connected with or used in the business of the master or employer.

"2. When the injury is caused by reason of the negligence of any person in the service or employment of the master or employer, who has any superintendence intrusted to him, whilst in the exercise of such superintendence.

"3. When such injury is caused by reason of the negligence of any person in the service or employment of the master or employer to whose orders or directions the servant or employe, at the time of the injury, was bound to conform, and did conform, if such injuries resulted from his having so conformed.

"4. When such injury is caused by reason of the act or omission of any person in the service or employment of the master or employer, done or made in obedience to the rules and regulations or by-laws of the master or employer, or in obedience to particular instructions given by any person delegated with the authority of the master or employer in that behalf.

"5. When such injury is caused by reason of the negligence of any person in the service or employment of the master or employer, who has the charge or control of any signal, points, locomotive, engine, switch, car, or train upon a railway, or of any part of the track of a railway.

"But the master or employer is not liable under this section, if the servant or employe knew of the defect or negligence causing the injury, and failed in a reasonable time to give information thereof to the master or employer, or to some person superior to himself engaged in the service or employment of the master or employer, unless he was aware that the master or employer, or such superior already knew of such defect or negligence; nor is the master or employer liable under sub-division one, unless the defect therein mentioned arose from, or had not been discovered or remedied owing to the negligence of the master or employer, or of some person in the service of the master or employer, and intrusted by him with the duty of

seeing that the ways, works, machinery, or plant, were in proper condition.

"If such injury results in the death of the servant or employe, his personal representative is entitled to maintain an action therefor, and the damages recovered are not subject to the payment of debts or liabilities, but shall be distributed according to the statute of distributions.

"Damages recovered by the servant of or employe, of from the master or employer, are not subject to the payment of debts, or any legal liabilities incurred by him.

"The personal representative, and the sureties on his bond are liable to the parties in interest for the due and legal distribution of all damages recovered by such representative under section 2588, or section 2589, or section 2591, and are subject to all remedies which may be pursued against such representative and sureties for the due administration of personal assets."*

Georgia.

"Railroad companies are common carriers, and liable as such. As such companies necessarily have many employes who cannot possibly control those who should exercise care and diligence in the running of trains, such companies shall be liable to such employes as to passengers for injuries arising from the want of such care and diligence.

"If the person injured is himself an employe of the company, and the damage was caused by another employe, and without fault or negligence on the part of the person injured, his employment by the company shall be no bar to the recovery."†

Iowa.

"Every corporation operating a railway shall be liable for all damages sustained by any person, including employes of such corporation, in consequence of the neglect of agents, or by any mismanagement of the engineers or other employes of the corporation, and in consequence of the wilful wrongs, whether of commission or omission of such agents, engineers or other employes, when such wrongs are in any manner connected with the use and operation of any railway, on or about which they shall be employed, and no contract which restricts such liability shall be legal or binding."‡

Kansas.

"Every railroad company organized or doing business in this state shall be liable or all damages done to any employe of such company

* Act of 1885, §§ 2590–2593.

† Acts of 1855, Code of 1873, §§ 2083, 3036.

‡ Rev. Code, 1888, § 1307.

in consequence of any negligence of its agents, or by any mismanagement of its engineers, or other employes, to any person sustaining such damage."*

Massachusetts.

"SECTION I. Where, after the passage of this act, personal injury is caused to an employe, who is himself in the exercise of due care and diligence at the time:

" (1) By reason of any defect in the condition of the ways, works, or machinery connected with or used in the business of the employer, which arose from or had not been discovered or remedied owing to the negligence of the employer or of any person in the service of the employer and intrusted by him with the duty of seeing that the ways, works, or machinery were in proper condition; or

" (2) By reason of the negligence of any person in the service of the employer, intrusted with and exercising superintendence, whose sole or principal duty is that of superintendence.

" (3) By reason of the negligence of any person in the service of the employer who has the charge or control of any signal, switch, locomotive engine or train upon a railroad, the employe, or in case the injury results in death the legal representatives of such employe, shall have the same right of compensation and remedies against the employer as if the employe had not been an employe of nor in the service of the employer, nor engaged in its work.

"SECTION II. Where an employe is instantly killed or dies without conscious suffering, as the result of the negligence of an employer or of the negligence of any person for whose negligence the employer is liable under the provisions of this act, the widow of the deceased, or in case there is no widow, the next of kin, provided that such next of kin were at the time of the death of such employe dependent upon the wages of such employe for support, may maintain an action for damages therefor and may recover in the same manner, to the same extent, as if the death of the deceased had not been instantaneous, or as if the deceased had consciously suffered.

"SECTION III. The amount of compensation receivable under this act in cases of personal injury shall not exceed the sum of four thousand dollars. In case of death, compensation in lieu thereof may be recovered in not less than five hundred and not more than five thousand dollars, to be assessed with reference to the degree of culpability of the employer herein, or the person for whose negligence he is made liable; and no action for the recovery of compensation for injury or death under this act shall be maintained, unless notice of the time, place and cause of the injury is given to the employer within thirty

*Gen. Statutes, 1889, § 1251.

days, and the action is commenced within one year, from the occurrence of the accident causing the injury or death. But no notice given under the provisions of this section shall be deemed to be invalid or insufficient solely by reason of any inaccuracy in stating the time, place or cause of the injury: provided, it is shown that there was no intention to mislead, and that the party entitled to notice was not in fact mislead thereby.

"SECTION IV. Whenever an employer enters into a contract, either written or verbal, with an independent contractor to do part of such employer's work, or whenever such contractor enters into a contract with a sub-contractor to do all or any part of the work comprised in such contractor's contract with the employer, such contract or sub-contract shall not bar the liability of the employer for injuries to the employes of such contractor or sub-contractor, by reason of any defect in the condition of ways, works, machinery or plant, if they are the property of the employer, or furnished by him, and if such defect arose or had not been discovered or remedied, through the negligence of the employer or of some person intrusted by him with the duty of seeing that they were in proper condition.

"SECTION V. An employe or his legal representative shall not be entitled under this act to any right of compensation or remedy against his employer in any case where such employe knew of the defect or negligence which caused the injury, and failed within a reasonable time to give, or caused to be given, information thereof to the employer, or to some person superior to himself in the service of the employer, who had intrusted to him some general superintendence.

"SECTION VI. Any employer who shall have contributed to an insurance fund created and maintained for the mutual purpose of indemnifying an employe for personal injuries for which compensation may be recovered under this act, or to any relief society formed under chapter two hundred and forty-four of the acts of the year eighteen hundred and eighty-two, as authorized by chapter one hundred and twenty-five of the acts of the year eighteen hundred and eighty-six, may prove, in mitigation of the damages recoverable by an employe under this act, such proportion of the pecuniary benefit which has been received by such employe from any such fund or society on account of such contribution of said employer, as the contribution of such employer to such fund or society bears to the whole contribution thereto.

"SECTION VII. This act shall not apply to injuries caused to domestic servants, or farm laborers, by other fellow employes, and shall take effect on the first day of September, eighteen hundred and eighty seven."*

*Act 1887, ch. 270.

Minnesota.

"Every railroad corporation owning or operating a railroad in this state shall be liable for all damages sustained by any agent or servant thereof, by reason of the negligence of any other agent or servant thereof, without contributory negligence on his part, when sustained within this state, and no contract, rule or regulation between such corporation and any agent or servant shall impair or diminish such liability. *Provided*, That nothing in this act shall be so construed as to render any railroad company liable for damages sustained by any employe, agent, or servant while engaged in the construction of a new road, or any part thereof, not open to public travel or use."*

Mississippi.

"Every railroad company shall be liable for all damages which may be sustained by any person, in consequence of the neglect or mismanagement of any of their agents, engineers or clerks, or for the mismanagement of their engines; but for injury to any passenger upon any freight train not being intended for both passengers and freight, such company shall not be liable except for the gross negligence or carelessness of its servants."†

Montana.

"That in every case the liability of the corporation to a servant or employe acting under the orders of his superior, shall be the same in case of injury sustained by default or wrongful act of his superior, or to an employe not appointed or controlled by him as if such servant or employe were a passenger."‡

Rhode Island.

"If the life of any person, being a passenger in any stage coach or other conveyance, when used by common carriers, or the life of any person, whether a passenger or not, in the care of proprietors of, or common carriers by means of, railroads or steamboats, or the life of any person crossing upon a public highway with reasonable care, shall be lost by reason of negligence or carelessness of such common carriers, proprietor or proprietors or by the unfitness or negligence or carelessness of their servants or agents, in this state, such common carriers, proprietor or proprietors shall be liable to damages for the injury caused by the loss of life of such person, to be recovered by action of the case, for the benefit of the husband or widow and next of kin of the deceased person, one-half thereof to go to the

*Stat. 1891, § 2606.

†Rev. Code, 1880, § 1054.

‡ Rev. Stat. 1879, fifth div. § 318.

husband or widow and one-half thereof to the children of the deceased." *

Texas.

"SECTION I. That all persons engaged in the service of any railway corporations, foreign or domestic, doing business in this state, who are intrusted by such corporation with the authority of superintendence, control or command of other persons in the employ or service of such corporation, or with the authority to direct any other employe in the performance of any duty of such employe, are vice principals of such corporation, and are not fellow servants with such employe.

"SECTION II. That all persons who are engaged in the common service of such railway corporations, and who, while so engaged are working together at the same time and place to a common purpose, of same grade, neither of such persons being entrusted by such corporations, with any superintendence or control over their fellow employes, are fellow servants with each other; *Provided*, That nothing herein contained shall be so construed as to make employes of such corporation, in the service of such corporation, fellow servants with other employes of such corporation, engaged in any other department or service of such corporation. Employes who do not come within the provisions of this section shall not be considered fellow servants.

"SECTION III. No contract made between the employer and employe, based upon the contingency of the injury or death of the employe, limiting the liability of the employer under this act, or fixing damages to be recovered, shall be valid and binding."†

Wisconsin.

"Every railroad corporation shall be liable for all damages sustained by any agent or servant thereof by reason of the negligence of any other agent or servant thereof, without contributory negligence on his part, when sustained within this state, or when such agent or servant is a resident of and his contract of employment was made in this state, and no contract, rule or regulation between any such corporation and any agent or servant shall impair or diminish such liability."‡

Wyoming.

"Any person in the employment of any railroad company in this territory, who may be killed by any locomotive, car or other rolling stock, whether in the performance of his duty or otherwise, his widow or heirs may have the same right of action for damages against such

* Pub. Stat. 1882, ch. 204, § 15.

† Approved March 10, 1891, Gen. Laws 1891, Ch. 24.

‡ Enacted in 1875, Rev. Stat. § 1816, and repealed in 1880. Laws 1880, ch. 232.

company as if said person so killed were not in the employ of said company; any agreement he may have made, whether verbal or written, to hold such company harmless or free from action or damages in the event of such killing, shall be null and void, and shall not be admitted as testimony in behalf of said company in any action for damages which may be brought against them; and any person in the employ of said company who may be injured by any locomotive, car, or other rolling stock of said company, or by other property of said company, shall have his action for damages against said company the same as if he were not in the employ of said company; and no agreement to the contrary shall be admitted as testimony in behalf of said company."*

"It shall be unlawful for any person, company or corporation, to require of its servants or employes as a condition of their employment, or otherwise, any contract or agreement, whereby such person, company or corporation shall be released or discharged from liability or responsibility, on account of personal injuries received by such servants or employes, while in service of such person, company or corporation, by reason of the negligence of such person, company or corporation, or the agents or employes thereof, and such contracts shall be absolutely null and void." †

*Comp. Laws, ch. 97 § 1.

† Laws of Wyoming, 1891, ch. 28.

PART III.

LEGISLATION IN FOREIGN STATES.

*Great Britain.**

"SECTION I. Where after the commencement of this act personal injury is caused to a workman

"(1) By reason of any defect in the condition of the ways, works, machinery, or plant connected with or used in the business of the employer; or (2) By reason of the negligence of any person in the service of the employer who has any superintendence entrusted to him whilst in the exercise of such superintendence; or (3) By reason of the negligence of any person in the service of the employer to whose orders or directions the workman at the time of the injury was bound to conform, and did conform, where such injury resulted from his having so conformed; or (4) By reason of the act or omission of any person in the service of the employer done or made in obedience to the rules or by-laws of the employer, or in obedience to particular instructions given by any person delegated with the authority of the employer in that behalf; or (5) By reason of the negligence of any person in the service of the employer who has the charge or control of any signal, points, locomotive engine, or train upon a railway,

"The workman, or in case the injury results in death, the legal personal representatives of the workman, and any persons entitled in case of death, shall have the same right of compensation and remedies against the employer as if the workman had not been a workman of nor in the service of the employer, nor engaged in his work.

"SECTION II. A workman shall not be entitled under this act to any right of compensation or remedy against the employer in any of the following cases: that is to say, (1) Under sub-section 1 of section 1, unless the defect therein mentioned arose from, or had not been discovered or remedied owing to the negligence of the employer, or of some person in the service of the employer, and entrusted by him with the duty of seeing that the ways, works, machinery, or plant were in proper condition. (2) Under sub-section 4 of section 1, unless the injury resulted from some impropriety or defect in the rules, by-laws, or instructions therein mentioned; *Provided* that where a rule or by law has been approved or has been accepted as a proper rule or by-law by one of Her Majesty's principal secretaries of state, or by the board of trade or any other department of the government, under or by virtue of any act of parliament, it shall not be deemed for the purposes of this act to be an improper or defective rule or by-law.

* 43 and 44 Vic. c 42, Sept. 8, 1870.

(3) In any case where the workman knew of the defect or negligence which caused his injury, and failed within a reasonable time to give, or cause to be given, information thereof to the employer or some person superior to himself in the service of the employer, unless he was aware that the employer or such superior already knew of the said defect or negligence.

"SECTION III. The amount of compensation recoverable under this act shall not exceed such sum as may be found to be equivalent to the estimated earnings, during the three years preceding the injury, of a person in the same grade employed during those years in the like employment and in the district in which the workman is employed at the time of the injury.

"SECTION IV. An action for the recovery under this act of compensation for an injury shall not be maintainable unless notice that injury has been sustained is given within six weeks, and the action is commenced within six months from the occurrence of the accident causing the injury, or, in case of death, within twelve months from the time of death: provided always, that in case of death the want of such notice shall be no bar to the maintenance of such action if the judge shall be of opinion that there was reasonable excuse for such want of notice.

"SECTION V. There shall be deducted from any compensation awarded to any workman, or representatives of a workman, or persons claiming by, under, or through a workman in respect of any cause of action arising under this act, any penalty or part of a penalty which may have been paid in pursuance of any other act of parliament to such workman, representatives, or persons in respect of the same cause of action; and where an action has been brought under this act by any workman, or the representatives of any workman, or any persons claiming by, under, or through such workman, for compensation in respect of any cause of action arising under this act, and payment has not previously been made of any penalty or part of a penalty under any other act of parliament in respect of the same cause of action, such workman, representatives, or person shall not be entitled thereafter to receive any penalty or part of a penalty under any other act of parliament in respect of the same cause of action.

SECTION VI. (1) Every action for recovery of compensation under this act shall be brought in a county court, but may, upon the application of either plaintiff or defendant, be removed into a superior court in like manner and upon the same conditions as an action commenced in a county court may by law be removed. (2) Upon the trial of any such action in a county court before the judge without a jury one or more assessors may be appointed for the purpose of ascertaining the amount of compensation. (3) For the purpose of regulating the conditions and mode of appointment and remuneration of such assessors,

and all matters of procedure relating to their duties, and also for the purpose of consolidating any actions under this act in a county court, and otherwise preventing multiplicity of such actions, rules and regulations may be made, varied, and repealed from time to time in the same manner as rules and regulations for regulating the practice and procedure in other actions in county courts.

" 'County court,' shall, with respect to Scotland, mean the 'Sheriff's court,' and shall, with respect to Ireland, mean the 'Civil Bill court.'

"In Scotland any action under this act may be removed to the court of session at the instance of either party, in the manner provided by, and subject to the conditions prescribed by, section 9 of the Sheriff Courts (Scotland) Act, 1877.

"In Scotland the sheriff may conjoin actions arising out of the same occurrence or cause of action, though at the instance of different parties and in respect of different injuries.

"SECTION VII. Notice in respect of an injury under this act shall give the name and address of the person injured, and shall state in ordinary language the cause of the injury and the date at which it was sustained, and shall be served on the employer, or, if there is more than one employer, upon one of such employers.

"The notice may be served by delivering the same to or at the residence or place of business of the person on whom it is to be served.

"The notice may also be served by post by registered letter addressed to the person on whom it is to be served at his last known place of residence or place of business; and, if served by post, shall be deemed to have been served at the time when a letter containing the same would be delivered in the ordinary course of post; and, in proving the serving of such notice, it shall be sufficient to prove that the notice was properly addressed and registered.

"Where the employer is a body of persons corporate or unincorporate, the notice shall be served by delivering the same at or by sending it by post in a registered letter addressed to the office, or, if there be more than one office, any one of the offices of such body.

"A notice under this section shall not be deemed invalid by reason of any defect or inaccuracy therein, unless the judge who tries the action arising from the injury mentioned in the notice shall be of opinion that the defendant in the action is prejudiced in his defense by such defect or inaccuracy, and that the defect or inaccuracy was for the purpose of misleading.

"SECTION VIII. For the purpose of this act, unless the context otherwise requires,—

"The expression 'person who has superintendence entrusted to him,' means a person whose sole or principal duty is that of superintendence, and who is not ordinarily engaged in manual labor:

"The expression 'employer,' includes a body of persons corporate or unincorporate:

The expression 'workman,' means a railway servant and any person to whom the Employers' and Workmen Act, 1875, applies.

"SECTION IX. This act shall not come into operation until the first day of January 1881, which date is in this act referred to as the commencement of this act.

"SECTION X. This act may be cited as the Employer's Liability Act, 1880, and shall continue in force till the thirty-first day of December 1887, and to the end of the then next session of parliament and no longer, unless parliament shall otherwise determine, and all actions commenced under this act before that period shall be continued as if the said act had not expired."

EMPLOYERS' LIABILITY ON THE CONTINENT OF EUROPE.

Nothing more is proposed here than a legislative record of what has been done in the leading industrial nations of Europe in the field of employers' liability legislation. The states in which no legislation has been enacted are France, Belgium, Holland, Denmark, Norway and Sweden. In Switzerland extended employers' liability legislation exists, while obligatory insurance, preceded by employers' liability, has been established in Germany, but not so preceded in Austria.

To these Italy should be added, where insurance is facilitated, but not required. It is worthy of note that in Italy, as well as in several of the other states, obligatory insurance has been proposed.

What is most striking in the showing is that, with the exception of Switzerland, in all of the continental states employers' liability as a method of dealing with accidents has been superseded by the principle of obligatory insurance, either in the laws or in the proposals for them. It may be noted further that in Switzerland insurance against accident is favored by law, and as a matter of fact this species of insurance has received an immense impetus since the passage of the law.

Germany.

The first step taken in Germany to define more sharply the liability for accidents is in the Prussian railroad law of 1838. As it is considdered the starting point in the development of German legislation on the subject it is here reproduced:*

"The company is required to make good any injury which may arise to any goods or any person carried on the railroad, or to other

*§ 25. Prussia Railroad Law of Nov. 3, 1838.

goods or persons, unless it can prove that such damage was due to the negligence of the injured person, or the result of unavoidable external accident. But the dangerous nature of the enterprise is not an explanation of an accident which excuses from the payment of damages."

In this the main element of such legislation is already seen. The burden of proof that the accident was something for which they could not be held responsible rests with the company.

A somewhat similar provision is found in the German Commercial Code, in relation to goods entrusted to a railroad for transportation.

The subject attracted much attention, especially with the rapid growth of manufactures, and the coincident increasing number of accidents, and in 1871 a long message, including a project for a law, was sent to the Reichstag. As a result of their deliberations the law of June 7, 1871, was passed.

The experiences under the law were not satisfactory. The indemnification could only be secured by means of long and expensive legal proceedings, and it was incumbent on the claimant to prove the negligence of the employer or his representative in the cases growing out of accidents in factories and the like.

These experiences, which cannot be recited in detail, led to a review of the whole question, and the substitution of the principle of insurance for that of employers' liability in the case of accident. After much discussion the first law on the subject was passed in 1884, and from that time the liability act became a dead letter except in a few cases.

We give the act, with notes on its interpretation, and its present scope, as affected by the insurance law.

THE LAW OF 1871.

"§ 1. When a person is killed or sustains bodily injuries by a railroad the administration of the latter is responsible for the losses sustained, unless it can prove that the accident was caused by superior force (*vis major*), or the negligence of the injured person.

§ 2. Whoever conducts a mine, quarry, pit or factory is responsible for the loss sustained whenever his agent, representative, superintendent or foreman, or any person employed to supervise the general operations of the business or the laborers, causes through his negligence in carrying out the operations of the business, the death or the bodily injury of any person.

§ 3. The damages in such cases [§§ 1 and 2] are to be fixed as follows:

"No 1. In the case of death to cover the costs of the medical treatment attempted, of the burial, and also the injury to the estate of the deceased caused during his illness by his complete or partial inability

to labor, as the case may be. If the deceased was at the time of his death legally responsible for the support of another person, the latter may claim damages to the extent that his means of subsistence have been diminished by the death of the former.

"No. 2. In the case of bodily injuries sustained, to cover the costs of medical treatment, and also losses sustained by the injured person through temporary or permanent disability to labor, or diminution of his earning capacity, resulting from the injuries sustained.

"§ 4 If the injured person or the deceased, was insured, with a participation of the employer in said insurance, against accident in any insurance company, beneficial society or similar institution, payments made by said institution in consequence of the accident are to be deducted from the damages accorded to the injured person: *Provided,* That the contribution of the employer to the cost of such insurance, amounts to one-third of the total of said costs.

"§ 5. The employers designated in §§ 1 and 2 of this act are not permitted to make any special contracts whereby the application of the preceding §§ 1 to 3 of this act shall be abrogated or limited to the benefit of said employers.

"Contracts contrary to the preceding paragraph have no legal validity.

§ [6. Repealed by § 13 of the act of January 30, 1877, prescribing the introduction of the code of procedure in civil cases].

"§ 7. The court shall have full power to decide, in view of all the circumstances of the case, as to the extent of damages, and also whether security shall be required, and if so, the nature of such security. In case the parties cannot agree to the amount of the capital to be given in satisfaction of the claim, the court may instead agree to the granting of an annuity to the injured person.

"The person required to pay the annuity can at any time demand the cessation or diminution of such payment, if the conditions under which the annuity was granted and its amount fixed, have essentially altered. The injured person can, provided the application be not barred by limitation [§ 8], at any time demand the increase or the renewal of the annuity, if the conditions which determined the fixation, diminution or withdrawal of the annuity, have essentially altered.

"The beneficiary of the annuity may at any subsequent time demand that security be furnished, or that the security be increased, if in the meantime the financial standing of the person required to pay the annuity shall have deteriorated.

"§ 8. Any claims for damages arising under sections one to three of this act must be made within two years from the day of the accident. Claims for the support of any person to whom the deceased was legally bound to furnish support [§ 3, No. 1] expire with the

death of this person. In the cases of minors, and persons in a similar legal status, the claims expire in the same period, except in the case of the renewal of an annuity.

"§ 9. The rules of the common law, according to which the employer, in the cases mentioned in sections one and two of this act, or any other person shall be responsible for the death or injury of any person in any industrial or other establishment, especially when the same shall be due to his own negligence, remain in full force.

"§ 10. The regulations of the law establishing a court of final resort in commercial cases of June 12, 1869, and the amendments to the same are hereby extended to all cases arising out of the present act, and of the rules of the common law mentioned in section nine."*

THE APPLICATION OF THE LAW.

The law as given is simply an outline, and its full meaning can only be understood in the light of the interpretation which has been given to it by the courts. A few notes taken from a reliable commentary† are therefore given to explain the full purport of the law. It has not been deemed essential to add here the references to the decisions quoted, as the intention is merely to exemplify the principles of the law.

Section one of the law is not entirely repealed by the obligatory insurance law, but its application has been restricted. It no longer applies to the direct employes of the railroad companies themselves, but still holds so far as third persons are concerned. In cases where the person who is killed or injured is insured by some other business, he or his representatives have a claim against the railroad, as well as rights under the insurance law.

The idea underlying the expression "operations of a railroad," is indicated in the law itself, and it includes not only such accidents as may arise from the use of natural forces, but everything which renders the working of a railroad peculiarly dangerous. It does not, therefore, include accidents which might equally well occur in other enterprises, and are not peculiar to railroading. It has been decided that the following belong to the operations of the railroad in the meaning of the law: The transfer of a train across a river on a ferry; the movement of cars by steam in making up a train; turning a locomotive on a turn-table for the purpose of moving cars; throwing articles from a train at full speed; removal of obstructions in order to continue operations, and injuries to the eyes by cinders from the locomotive. In a number of cases certain things have been included under the law on account of the speed necessary in particular cases, when if

*June 7, 1871.

†Sammlung kleinerer Reichsgesetze. Text-Ausgabe mit Anmerkungen und Sachregister, von F. Vierhaus, Oberlandesgerichtsrath. Berlin, Guttentag, 1890.

such speed was not essential in the case, they have not been considered as falling within the meaning of the law. Such cases are: Repairs of destroyed portions of the road, or unloading of rails for an oncoming train; the use of signal apparatus; the loading of an empty car of a freight train stopping only for a brief space at an intermediate station; and a hurried unloading because of an approaching train. On the other hand the following have not been considered as belonging to the operations under the law: Work on the site of a future road, even when the tracks are used: moving of switches in a station; repairs of locomotives in shops; and unloading under ordinary circumstances.

All tracks which serve simply the purposes of mining, and connections betwen the road and a factory, come within the law, but not a track used for a steam crane. Street railroads also are subject to the law.

Mental injury in consequence of accidents is placed on the same footing as bodily injury.

It is to be noted that the constructor of a road is not responsible according to section one. With regard to who is responsible it has been decided that ownership of the road is not the decisive point, but whether the road is carried on at the risk or account of any person, so that the financial result represents a gain or loss to him. In case two lines operate the same road, the responsibility for the accident rests with the line by which it was caused, or if two or more participate in the accident they are jointly liable. On through trains each line is responsible during the occupancy of its track, whether the train was in the hands of its own employes or those of another company.

By superior force [*vis major*] is meant an accident which exceeds the measure of those which in the ordinary course of affairs might be more or less frequently expected from the nature of the business, and which could not have been avoided by the exertion of the utmost care on the part of the railroad. Under these conditions an accident may be an instance of *vis major*, when brought about by human agency, though in no circumstances if arising out of the nature of the business, or the act of an employe.

It does not require gross negligence on the part of the injured person to excuse the railroad company, as even a slight negligence will have this effect, except in every case the actions of a child less than seven years old. There must be some connection between the negligence and the accident, the mere infraction of the rules of the company is not in itself a sufficient proof of negligence.

Like section one the second section of the law does not apply since the passage of the insurance law, to persons employed in mines, factories, etc., but only to third persons.

The word "mine," as used in the law, means mines strictly so-called,

and does not include the somewhat analogous operations of boring for water or for oil, or the construction of tunnels, nor is the last included under the term "quarry." In the meaning of the law a pit is an excavation for the purpose of obtaining for direct commercial uses the materials contained in it, not excavations in construction of works, simply for the purpose of removing a body of earth. So a factory is to be taken in the strict sense. Building in general, and even building for factory purposes. is not included in the law.

The factory must be in operation at or before the time of the accident. It is not necessary that there should be a connection beween the accident and the danger peculiar to that branch of manufacture, but simply with the working of the factory in general. As a general rule, when the product is manufactured and has left the factory, there can be no connection between any accident and the workings of the factory, although in one case the court decided that such a connection existed where a manufacturer of pipes for water works also undertook to put them in place.

While in general a common laborer is not to be accounted as entrusted with supervision in a factory, there may be cases in which such duties have been assigned to him.

The question whether the concurrent negligence on the part of the injured person excludes the right to indemnification is not to be judged by the ordinary rules of the law, but it must be decided affirmatively in cases of great carelessness, but not when he was following the order of his immediate superior, and not in the attempted rescue, on his own motion, of another laborer who has been injured.

In the interpretation of section three it is to be noted that the claim of a dependent is good if the relationship existed at the death of the injured person, and not merely at the time of the accident. Hence it includes a widow of a marriage subsequent to the accident, or an illegitimate child born after the accident. Nor is it essential that the person should have been in necessitous cirumstancces at the time of the decease. Whether the deceased person was actnally fulfilling his duty of affording support to the person making the claim is not essential, nor does it affect the case if other persons in duty bound to furnish support still live. On the other hand, in determining the annuity to be paid to the widow, no consideration can be taken of her duty to support her minor children.

It may be remarked in this connection that the insurance law gives right to indemnification only to a widow married before the accident, the children of the deceased, and the ascendents only in the case the deceased was their sole support, and to the heirs of a foreigner only when they reside in Germany.

The necessities of the person in question are the measure of the indemnification to be given. While the possession of property or of

relatives does not exclude the right to indemnification, the capacity to earn one's own living does. Hence, children who are at an age when they might earn their own living are supposed to be able to do so, and if not, they must bring evidence to this effect. If before the accident the widow has not been earning any income of her own she is not to be supposed capable of doing so afterwards. But in any case the indemnification must be measured in consideration of the actual earnings of the deceased, and no consideration can be given to prospective earnings.

The annuity to be given lasts in the first place as long as the duty of support would have continued, and hence, in the case of children, up to the time when they would probably be capable of earning their own living, and, furthermore, according to the probable expectation of life of the deceased. Any pensions for widows and orphans to which the heirs are entitled by virtue of law are to be deducted from the annuity, but not so sums to be paid by reason of a contract of insurance which the deceased may have entered into.

An offer on the part of the former employer to take the injured person into his service at the old rate of compensation, need not be accepted, and does not therefore annul the claim of the injured person to damages.

No deduction can be made from the amount of damages, because of insurance as provided in § 4, unless the contribution of the employer, to the total cost of insurance, and not merely to that of a single year, exceed the sum mentioned in the paragraph. A contribution less than that mentioned receives no consideration whatever.

While no contract designed to avoid the duty of paying damages holds good in law, this does not prevent contracts on the subject being made after the accident. And further, it is to be noted that the limitations mentioned in section eight begin with the day of the accident, and that it is wholly immaterial when the consequences may have first appeared.

THE SCOPE OF THE LAW.

The limitations placed by the obligatory insurance law of July 6, 1884, on the scope of the employers' liability law can best be expressed in the language of the law itself. We give such sections as relate to this subject.

"§ 95. The persons insured in accordance with this act, or their legal representatives, can make a claim for damages against the employer or his representatives only when it shall be proven in a criminal process that the latter brought about the accident intentionally."

In such a case the claim is limited to the excess allowed under existing laws on the subject, over the amount to be paid to the injured person in virtue of the present act.

"§ 96. Any employers or their representatives concerning whom it shall be proven in a criminal process that they caused the accident with intention, or by a neglect of the care which they should, by virtue of their office and profession, have exercised, are responsible to the insurance corporations for whatever payments may be made by the latter."

Incorporated companies, joint-stock companies and similar organizations, and also firms, are responsible for accidents caused under the above conditions by their officers, members or representatives.

In such cases a fixed sum of money may be demanded instead of the annuity paid by the insurance corporation.

The claim expires in eighteen months from the day in which judgment is given in the criminal case.

"§ 97. The claims mentioned in sections ninety-five and ninety-six can be made, without the facts having been ascertained in a criminal process, if by reason of the death or absence of the person in question, or for other good and sufficient reason, such judgment cannot be had.

"§ 98. The responsibility of third persons not named in the preceding sections who may have caused the accident intentionally is regulated by the existing laws. But the claim against such persons is transferred to the insurance corporations if under the present law they are required to make payments in the premises."

The principle of obligatory insurance against accidents, as laid down in the law of July 6, 1884, has in the lapse of time been extended to several classes of laborers not included in the first law. In several of these later laws there are provisions analogous to those already quoted, which it seems wholly unnecessary to repeat here, especially as the agreement is in some cases literal.

Switzerland.

While in other countries the principle of obligatory insurance has made much headway, in Switzerland it has not met with much favor. As a consequence Switzerland has devoted more attention to the principle of employer's liability, and presents in its legislation the widest application of the principle on the continent of Europe. The development has not been checked as it was in Germany, by the introduction of other plans for treating the problem of accidents, while this development in Germany, Austria and elsewhere has stimulated Switzerland to amend and to extend its laws, and thus to meet, if possible, the difficulties which in other states had led to other methods.

The first step in Switzerland was the passage, in 1875, of the law relating to accidents occurring on railroads and steamboats. It was expressly modeled on the German law of 1871, although its application was narrower. No provision was made in the law for any liability in factories. This, however, was not long coming. In 1877 the well-

known Swiss factory law was passed, and in it provision was made for liability in case of accidents, though the details were left for a subsequent law. The temporary provisions of the factory law are, however, an integral step in the development of the Swiss legislation, and we reproduce them here.

FEDERAL LAW CONCERNING LABOR IN FACTORIES.

"ART. 5. The liability of employers for accidents in factories shall be regulated by federal law.

"In the meantime the following principles are to be observed by the courts:

"*a.* The manufacturer is responsible for the loss which results when his agent, representative, manager or superintendent of the factory, by any negligence in carrying out the operations of the same, causes the death or bodily injury of a workman therein.

"*b.* The manufacturer is likewise responsible when, without any such negligence, the death or bodily injury of an employe or workman is caused through the workings of the factory, unless he can prove that the accident was caused by the act of God, or the negligence of the person killed or injured. If the killed or injured person was partially at fault in the matter, the damages to be paid by the manufacturer are to be correspondingly reduced.

"*c.* Claims or damages expire in two years from the day on which the death or injury occurred.

"*d.* The federal council shall designate those industries, which, according to experience, cause certain specific diseases, and the above provisions shall be applicable to these industries.

"Until the passage of the special law the courts will adjudge claims for damages of this nature with a due consideration of all the facts of the case in their discretion."*

In these very general directions lay a difficult problem for the courts to meet, and it is not surprising, therefore, that the law received very varied interpretations in the courts of the different cantons. Great uncertainty prevailed among manufacturers and workingmen as to the meaning which any particular court might assign to the words. This made the passage of a law regulating the entire subject imperative, and accordingly, on the 20th of November, 1880, the federal council sent a communication on employers' liability with the project of a law to the federal assembly. The law passed June 25, 1881, and six years later its provisions were further extended.

The legislative material which follows consists of the three laws mentioned, and two circulars of the federal administration on the enforcement of the same.

*March 23, 1877.

I.

FEDERAL LAW ON THE LIABILITY FOR INJURIES AND DEATH CAUSED BY ACCIDENTS ON RAILROADS AND STEAMBOATS.

"The Federal Assembly of the Swiss Confederation, on the consideration of the message of the Federal Council of May 2, 1874, resolves:

"ART. 1. When in the construction of a railroad, through any fault whatsoever of the company, any person is killed or sustains bodily injuries the company is responsible for the resulting damages.

"ART. 2. When in the operations of any railroad or steamboat enterprise any person is killed or sustains bodily injuries, the carrier is responsible for the resulting damages, unless he can prove that the accident was caused by the act of God, or by the negligence or misdemeanor of travelers or other third persons not employed by the carrier (Art. 3) without concurrent negligence of the latter, or by the fault of the person killed or injured.

"ART. 3. Railroads and steamboat companies are responsible not only for their regular officials, but also for all other persons employed by them for their business of transportation, or in the construction of roads.

"ART. 4. If it can be proven that the killed or injured person came into connection with the carrier with a dishonest or criminal intention, or with a conscious infraction of police regulations, no damages can be demanded as set forth in articles one and two of this act, even when the accident shall have occurred without any negligence on the part of the injured person.

"ART. 5. In the case of death the damages to be paid must cover the costs of medical treatment attempted, of the funeral, and also the loss of property sustained by the deceased during his illness through complete or partial inability to labor.

"If the deceased was at the time of his death responsible for the support of another person, the latter can demand damages to the extent that his means of support have been withdrawn by the decease of the person killed.

"In case of bodily injury the damages to be paid must cover the costs of medical treatment, and the loss of property sustained by the injured person through a permanent or temporary disability to labor, or a diminution of earning capacity.

"ART. 6. As compensation for future support the court may, in its discretion, accord either a fixed sum of capital or an annuity.

"If at the moment of passing judgment on the case, all of the consequences of the injuries received, are not clearly apparent, the court may in exceptional cases reserve the right to amend the judgment in the case of subsequent death of the injured person or aggravation of the injuries.

"ART. 7. If it be proven that the carrier has been guilty of treach-

ery, or gross negligence, a sum of money may be given to the injured person or representative of the deceased, in excess of the damages proven.

"ART. 8. If at the accident causing death or injuries for which, according to the provisions of this act, the carrier is responsible, goods which the killed or injured person had in his own charge, are wholly or partially destroyed, or are lost, compensation must be made for such damage or loss.

"For the loss, destruction or injury to any other goods which have not been given to the carrier, either as freight or baggage, compensation is to be made only when the negligence of the carrier can be proven.

"ART. 9. In the case mentioned in article eight, the measure of damages is the actual value of the goods lost, damaged or destroyed, and only in the case of or gross negligence, may consequential damages from the same be allowed.

"ART. 10. Claims for damages arising from the provisions of this act expire in two years from the day in which the death, injury, destruction or damage, or loss [Art. 8] occurred.

"This period is interrupted not only by bringing suit, but by a written demand on the administration claiming the damages, on the principle that the claim cannot expire so long as this demand remains unanswered.

"If this demand meets with a refusal, a further period of two years from the date of such refusal remains in which to bring suit, and this period cannot be interrupted by a new written demand on the administration.

"ART. 11. In cases arising under this act, the court shall decide on the measure of damages and the truth of all statements of fact, by a consideration of all the proceedings, without being bound by the rules of evidence laid down in the appropriate law regulating the procedure.

"ART 12. Regulations, notices or special agreements, whereby the responsibility for damages under the provisions of this act are limited or abrogated, have no legal validity.

"ART. 13 All federal laws, cantonal laws, administrative regulations and all notices and agreements contrary to the provisions of this law are hereby repealed.

"ART. 14. The federal council is commissioned according to the provisions of the federal law of June 17, 1874, concerning the passage of federal laws and resolutions, to publish this law and to determine the date upon which it shall take effect.

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* Law of July 1, 1875.

II.

FEDERAL LAW CONCERNING LIABILITY FOR ACCIDENTS IN FACTORIES.

"The Federal Assembly of the Swiss Confederation, in consideration of article thirty-four of the federal constitution, and in execution of paragraph one of article five of the federal law concerning labor in factories, of March 23, 1877; after consideration of the message of the federal council of December 26, 1880, resolves:

"ART. 1. Whoever conducts a factory as defined in the act of March 23, 1877, is, whenever in the limits of his factory and through the operations of the same an employe or laborer is killed or sustains bodily injuries, responsible for the resulting damages, when he himself, his agent, representative, manager or superintedent has by any negligence in carrying out the operations of the business caused the injury or death.

"ART. 2. The employer is equally responsible when without such negligence an employe or laborer is killed or injured in the limits of his factory, and through the operations of the same, unless he can prove that the accident was caused by the act of God, or by the crime or misdemeanor of third persons not named in article one, or that it occurred through the fault of the person killed or injured.

"ART. 3. In those industries which the federal council in execution of article five, letter *d*, of the factory law, has designated as those which produce dangerous diseases, the employer is responsible also for the damages resulting to an employe or laborer from disease, when the disease is proven to have been contracted exclusively through occupation in the factory.

"ART. 4. The employer has a claim for compensation against all persons for whose negligence he is responsible.

"ART. 5. The damages to be paid by the employer shall be reduced in a just measure:

"*a.* When the death or injury [exclusive of the cases mentioned in Art. 3] is the result of pure accident;

"*b.* When the injured person is partially responsible for the accident [or illness, according to Art. 3], especially when he has as employe or laborer acted contrary to the rules of the factory, or has discovered a defect in arrangements whereby the accident [or the illness] has been caused, without informing his superior or the employer himself, unless the claimant can prove that the employer or his proper agent was duly informed of this defective or dangerous condition.

"*c.* When previous injuries have had an effect upon the last and its consequences, or when the health of the sick employe or laborer was already impaired by his prior occupation.

"ART. 6. The damages to be paid include:

"*a.* In case of death:

"The costs of medical treatment, the loss which the deceased sustained during his illness by complete or partial inability to labor, the costs of the burial, and the loss which the dependents of the deceased sustain when the latter was legally required to furnish them support.

"The dependents who are entitled to make such claims are husbands and wives, children and grandchildren, parents and grandparents, brothers and sisters.

"*b.* In the case of injury or disease:

"The costs of medical treatment, and the loss sustained by the injured or diseased person, through complete or partial, permanent or temporary inability to labor.

"The court shall determine, after consideration of all the circumstances, the amount of the damages, which, however, in the most serious cases [Art. 1 and 3] shall not exceed six times the annual earnings of the claimant, and in no case shall exceed the sum of 6,000 francs.

"This maximum does not apply when the injury or death was caused by any action of the employer which would render him liable to a criminal prosecution.

"In any case the costs of medical treatment, nursing and burial are not to be included in the above maximum.

"With the consent of all parties concerned the court may order the payment of an appropriate annuity instead of a sum of capital.

"On the day in which the final judgment of the court goes into effect, the responsibility of the manufacturer for any further claims ceases.

"ART. 7. Claims arising under the provisions of this act are not subject to the trustee or similar process whereby a third person secures the benefit of the payments, nor can these claims be transferred to any other person.

"All claims and payments are excluded from process of execution, arrest or seizure, and from the satisfaction of creditors in case of bankruptcy.

"ART. 8. When at the time judgment shall be passed on any case the consequences of the injury or illness shall not be clearly apparent, the court may in exceptional cases, reserve the right to increase the amount of the damages in case the condition of the injured or diseased person should become worse. The total of such damages shall not exceed the limits fixed by article six.

"ART. 9. When the person killed, injured or diseased is insured in any accident insurance company, beneficial society or similar institution, and when the employer has been a party to such insurance

through premiums or other contributions, the entire payments of such institution to the injured or sick person or the legal representatives of the deceased, are to be deducted from the payments of damages to be made by the employer in case the latter has paid not less than one-half of the premiums or other payments constituting the cost of said insurance.

"If the contribution of the employer is less than one-half of these costs, then only a portion of the payments of the institution proportional to the share of the employer shall be deducted from the amount of damages to be paid by him.

"The employer can claim such deductions only when the insurance covers all kinds of accidents and sickness.

"ART. 10. Employers are not privileged to nullify or limit the provisions of this act by means of rules, notices, or special contracts with their employes or laborers, or with third persons. Provisions or contracts contrary to this provision have no legal validity.

"ART. 11. All cases arising out of the present act shall be decided by the cantonal courts, with appeal to the federal courts, according to provisions of the act governing the jurisdiction of the federal courts.

"ART. 12. Claims arising out of this act expire at the end of one year from the date of the accident causing the death or injuries, and the date on which the illness was recognized and officially certified to be a disease growing out of the occupation [Art. 5, letter *d*, of the factory law].

"In any case the parties concerned are privileged to have a judicial examination into the facts of the case before any suit is brought for the payment of damages.

"ART. 13. The limit of one year is also to be applied to the amendment of the judgment as provided in article eight, and it commences with the day on which the first judgment is given.

"ART 14. When there is any doubt whether an industrial establishment which is not on the register of factories, ought to have been entered in the same, and thus whether the present act is applicable to an accident or illness which may occur in the said establishment, a final decision is given by the federal council after requesting a report from the government of the canton in which the establishment is situated [Art. 1, paragraph 2, of the federal law on labor in factories, of March 23, 1877].

"ART. 15. Article five of the federal law on labor in factories, of March 23, 1877, with the exception of letter *d* of the same, is hereby repealed. All provisions of cantonal laws and ordinances contrary to the present law are hereby repealed.

"ART. 16. The federal council is commissioned, in accordance with the federal law of June 17, 1874, concerning the passage of federal

laws and resolutions, to publish this law and to fix the date on which it shall go into effect.*

III.

FEDERAL LAW CONCERNING THE EXTENSION OF THE LIABILITY FOR ACCIDENTS AND SUPPLEMENTING THE LAW OF JUNE 25, 1881

"The Federal Assembly of the Swiss Confederation, after consideration of the message of the federal council of June 7, 1886, resolves:

"ART. 1. The liability for accidents, according to the federal law of June 25, 1881, in factories [Art. 1 and 2] and other industries [Art. 3] is extended according to the provisions of that law, to:

"1. All occupations in which explosives are regularly produced or used;

"2. The following occupations in so far as they do not come under number one, and in so far as on the average more than five persons are employed:

"*a.* Building trades: included in the same are all operations in connection therewith, whether they are carried on at the place of building or in work shops or yards, or in the necessary transportation connected with the building;

"*b.* The livery business, the care of boats and of rafts. With the exception of articles four, six and seven this act has no application to steamboat transportation;

"*c.* The erection and repair of telephone and telegraph lines, the erection and removal of machines, and other movings, etc., of a technical character;

"*d.* The construction of railroads, tunnels, streets, bridges, the operations of hydraulic engineering and the exploitation of mines, quarries and pits.

"ART. 2. The responsibility rests, in the cases mentioned, in article one, numbers one and two, with the owner of the business, and more especially in the cases under article two, letters *c* and *d*, with the person at the head of the enterprise even in the cases in which the execution of the work had been confided to a third peron.

"When the operations named in article one are carried on for public account, the responsibility rests with the state, district, communal or corporate administration, as the case may be, but only in the case that for these labors more than five laborers are employed at the same time.

"In the case of the construction of railroads, the liability of the company and the extent of the damages are governed by article one of the law of July 1, 1875.

"ART. 3. The federal law of June 25, 1881, is applicable to all labor immediately connected with the operations of a factory, which does not take place in the enclosed space of the factory.

* June 25, 1881.

"ART. 4. The same law is extended to all labor not included in article two of the federal law of July 1, 1875, and in article two of the law of June 25, 1881, in the expression 'operations of the business,' but which forms a necessary accessory operation to the same.

"ART. 5. The articles four and nineteen, and the last sentence of article two of the federal law of March 23, 1877, are applicable to owners of business concerns and heads of enterprises, named in article one of the present act.

"ART 6. The cantons are required to provide by means of laws or ordinances, that:

"1. Necessitous persons who may bring suit under the present act or those of July 1, 1875, or of June 25, 1881, shall, unless by a preliminary examination of facts it shall appear that the claim is not well founded, have the benefit of gratuitous legal assistance, and that security, costs for experts, fees and stamp duties be remitted;

"2. Legal cases of this nature shall be afforded the most rapid procedure which can be used.

"ART. 7. In cases of this nature which come before the federal courts, if it appear that the plaintiff is in necessitous circumstances, and that his claim, according to the preliminary examination be not entirely without foundation, he shall be excused from the payment of the fees of court, and from furnishing the security required by article twenty-six* of the federal law of July 13, 1855. In such cases all prepayments of costs required of the plaintiff by article twenty-three† of said law, and all fees for witnesses and records shall be met from the treasury of the court.

"ART. 8. The owners of business concerns, and the heads of enterprises to whom the provisions of the present act, and that of June 25, 1881, are applicable, are required to keep a list of any considerable accidents which may occur in their business, in the form prescribed by the federal council, from which in addition to the date and result of the accidents must appear.

"1. When the report required by law was made to the proper authority:

"2. What damages have been paid in accordance with article six of the law of June 25, 1881; and,

"3. From what source such payments have been made.

*The article here referred to, reads: "When the plaintiff has no fixed residence in Switzerland, or is proven to be insolvent, he can at any time in the suit be required to furnish security, either by the deposit of money or collateral, or by the promise of responsible persons, for the amount of the court fees, and, at the request of the defendant, for all the costs of suit. The court requiring such security shall judge of its sufficiency or insufficiency.

"The suit shall be discontinued until such security be furnished."

†The article twenty-three reads: "Each party to the suit shall advance the fees involved in the case by its proceedings, and both parties in conjunction the costs of such steps as may be taken jointly, or on order of the court.

"The request for such advance is to be accompanied by the notice that in case the costs are not advanced that the step cannot be taken."

"These returns must be made, at the latest, three months before the expiration of the statutory limitations [Art. 12 and 13 of the law of June 25, 1881] to the proper cantonal authorities, who shall communicate them to the factory inspector of the district.

"Infractions of the provisions of this article may be punished by a fine of 5 to 100 francs, and in the case of a repetition, not exceeding 200 francs. These fines shall be imposed according to the rules of the cantons and the payment shall flow into the treasury of the canton.

"If the return is not made according to the provisions of this act, means must be taken to secure it from the dilatory person.

"In case of delay the statutory limitation does not begin until three months after the report has been received.

"ART. 9. When the officials of the federal government, or the cantonal governments charged with the execution of this law, learn that an employe or laborer injured, or the legal representatives of person killed, has a legal claim for damages under the present law or that of June 25, 1881, which has not been paid without the intervention of the courts, they shall make reports to the cantonal government. The government shall make an investigation of the facts and report thereon to the interested persons.

"Agreements whereby an injured person or the legal representative of a person killed, agree to accept a manifestly insufficient compensation for losses, may be opposed in legal proceedings.

"ART. 10. The provisions of article fourteen of the law of June 25, 1881, are applicable in an analogous manner, to any cases arising under the present law where there may be doubt whether the establishment is within the scope of the present act.

"ART. 11. The governments of the cantons are commisioned to provide for the execution of the present law.

"The federal council shall exercise a supervision over the execution of the law.

"ART. 12. The federal council is commissioned in accordance with the federal law of July 17, 1874, concerning the passage of federal laws and resolutions to publish this law and fix the date on which it shall go into effect.*

Circular of the federal council addressed to the cantonal governments on the execution of the federal law on the liability of employers of April 26, 1887.

"We take occasion to recommend to your consideration the following points in regard to the execution of this law.

"1. In the first place it seems of the first importance that all persons interested in these laws should be well informed concerning them. When we consider that it was several years before the law of 1881 was even tolerably known among those whom it most closely af-

* April 26, 1887.

fected, and how unsatisfactory and unjust were the conditions which resulted from this fact, we are forced to the conclusion that too much cannot be done to spread the knowledge of the new law We would, therefore, commend it to you most earnestly to provide for the most extensive, and repeated publication of the laws of July 1, 1875, June 25, 1881, and April 26, 1887, in order that all may know their rights and obligations.

" By article eleven of the last named law the cantonal governments are charged with the execution of the same. In calling your attention to this provision we wish to emphasize that an energetic execution of the law from the first is highly necessary. We recommend this to your attention, and especially that the subordinate organs of the governments may be held to the strictest fulfilment of their duties.

"If we summarize the provisions of the law which the governments have either to put into immediate execution or which should be especially kept in mind, the following deserve the most attention:

"*a.* Provision should be made that the following provisions of the law relating to labor in factories should be enforced:

[Art. 2, last paragraph.]

"'For the protection of health and the prevention of injuries, all means of protection which experience has demonstrated, which the technical development and the conditions of the manufacture permit, must be used.'

"[Art. 4.]

"'The manufacturer is required to give immediate notice to the proper local authority of all considerable bodily injuries and deaths which may take place in his factory. This local authority shall make an official examination of the causes and results of such occurrences, and report to the cantonal government.'

"In regard to the first provision we would remark that the main object of the legislation on employers' liability is to lessen the number of accidents: that is to induce the employer to contribute to this end by providing proper preventive measures, and by this means to avoid the financial loss which he sustains by accidents which render him liable for damages.

"In regard to the last provision we would urge you to insist that the notifications of accidents be made regularly and punctually; neglect should not be condoned. It is to be regretted that at the present time, after the law concerning labor in factories has been in operation four years, the observance of article four leaves much to be desired.

"*b.* Article six of the law reads:

"The cantons are required to provide by means of law or ordinances that:

"1. Necessitous persons who may bring suit under the present act, or those of July 1, 1875, or June 25, 1881, shall, unless by a preliminary examination of the facts it shall appear that the claim is not well founded, have the benefit of gratuitous legal assistance, and that security, costs of experts, fees and stamp duties be remitted;

"2. Legal cases of this nature shall be afforded the most rapid procedure which can be used.

"We request that the greatest efficiency be given to this article, where it has not already been done, and that at the proper time, a report be made to us of the measures taken to secure these ends.

"*c.* After the 1st of November, the list of considerable accidents provided in article eight should be introduced. We recall to your attention the fact that our circular of January 6, 1882, gave to the word 'considerable,' the definition which follows, and which is to be retained:

"'As a considerable injury is to be considered such a one as results in an incapacity to labor for a period of more than six days.'

"The law provides for a form of notice to be prescribed by the federal council and specimens of such notices are accordingly sent herewith. You are requested to obtain supplies for your own use.

"Your attention is called to the fact that article eight of the law provides that the list of considerable accidents should be kept by the proprietors of all concerns which come under the operation of the law of June 25, 1881, and hence of all to whom the law concerning labor in factories applies.

"We would request that everything possible be done to secure the prompt execution of these provisions relating to the lists, as they facilitate greatly the exercise of the supervision over the liability of the employer, and the entire observance of the law.

"*d.* Besides the notice of the accident [Art. 4 of the law concerning labor in factories quoted above under *a*], and the list of accidents [Art. 8, Par. 1, of the law of April 26, 1887, cf. above under *c*] employers, also those under the law of June 25, 1881, are required by article eight, paragraph two, of the law of April 26, 1887, to report to the proper authority:

"1. When the report required by law was made to the proper authority;

"2. What damages have been paid in accordance with article six of the law of June 25, 1881; and,

"3. From what source such payments have been made.

"This report should be made at the same time with that now required on the consequences of the accident: this arrangement is a very natural one, and decreases the number of reports to be made.

"With respect to the notification of the federal factory inspector, the system prescribed by the circulars of November 28 and December 17, of the Department of Railroads and Commerce, should be retained. Some changes must be made in the form prescribed, and samples of the amended forms are sent herewith.

"We call attention finally to the last paragraph of article eight and urge its strict enforcement.

"*e.* A powerful means of preventing persons who are entitled to damages of being deprived of them, is to be found in article nine, paragraph one, of the law of April 26, 1887. We cannot refrain from mentioning in this place how important an attentive observance of this provision will be; it cannot remain a dead letter unless the system of supervision designed by the law over the payment of damages is to wholly or partially without effect.

"3. The question may be raised whether it should not be better as was done under the law regulating labor in factories, to make an enumeration of all the industrial enterprises to which the law applies. A close examination of the matter, however, shows the impossibility of such a plan. The law includes a large number of enterprises which are changing in place or of a migratory character, and on the other hand it includes a large number of 'accessory operations,' which are not necessarily to be found here or there, but which may occur in connection with any establishment. Under the circumstances it is evidently impossible to prepare a list such as exists for the establishments under the factory act; and article ten provides that in case of doubt a decision shall be given by the federal council.

"4. So far as the provision of article eleven for supervision by the federal council is concerned, it will be exercised in the same way as before, through our officers, the inspectors of factories. Experience will show whether the system can be retained. The small number of inspectors and the volume of business already required of them, call for the greater activity in the matter on the part of the proper cantonal authorities.

"We anticipate with confidence that you will do your part in the solution of these new tasks and problems."

Bern, October 25, 1887.

Circular of the federal council, addressed to the cantonal governments and to the administrations of all railroad and steamboat lines.

The federal law concerning the extension of the liability for accidents, etc., of April 26, 1887, contains the following provisions relating to railroads and steamboats:

"1. That the liability for accidents in factories established by the law of June 25, 1881, be extended also to the construction of railroads [Art. 1, letter *d*] with the reservation, however [Art. 2. Par. 3], that the person required to pay damages and the amount of the same to be regulated by the law of July 1, 1875, on the liability for accidents on railroads and steamboats.

"2. That all labor directly connected with the conduct of the manufacture, be subject to the law, even when it is not carried on in the enclosed space of the factory itself.

"3. That the labor not included in the expression, 'operations of the business,' in article two of the law of July 1, 1875, and article two of the law of June 25, 1881, but which is a necessary accessory labor to these operations be subject to the law.

"Hence all accidents that may occur in the construction and operation of railroads or steamboats which result in death or bodily injury are placed under the operation of the law. The only distinction is that certain accidents which occur through the 'operations' in the strict sense are subject to the law of July 1, 1875, and all others to the law of June 25, 1881; subject to the reservation already mentioned [cf. above under 1].

"In view of the innovations introduced by these provisions we take occasion to add some further explanations to those contained in our circular of October 25, 1887, and that of the Department of Trade and Agriculture of November 8, 1887.

"1. We call attention to the fact that factory operations in the meaning of the law, include all operations of construction and repair shops, in short, of all branches which may be subordinate to the main department of the factory as indicated in the law.

"According to the present practice of the courts, those operations which, in the conduct of railroads, are not subject to the usual dangers arising out of the peculiar nature of the business are to be considered as accessory operations, for example, repairs of tracks, cleaning of cars and locomotives not in use, loading and unloading freight, etc.

"2. The railroad companies will continue to make the reports for all accidents under the law of July 1, 1875, to the railroad department, the supervising engineers and the cantonal authorities. The latter will continue to send the papers relating to the investigation to the department.

"So far as other accidents are concerned the railway companies may send to the department a copy of the notice made to the local authorities.

"3. The reports mentioned under two are also required from the administrations of steamboats.

"4. Furthermore, at the end of each year the administrations of railroads and steamboats shall notify the department:

"*a.* What damages have been paid in consequence of the accidents reported;

"*b.* From what source such such payments have been made.

"We invite you to give the proper observance to these directions.

"Bern, December 8, 1887.

The mode of enforcing regulations concerning industries which breed certain diseases may be next noticed.

"1. Article one of the ordinance regulating the manufacture and sale of matches, of October 17, 1882.

"'The manufacture of matches with yellow phosphorus is considered an industry producing dangerous diseases, and is placed under article three of the federal law concerning liability, or accidents in factories.'

"2. Circular of the federal council addressed to the cantonal governments of November 29, 1884.

"This provides that until the lead weights used in Jacquard looms are fully replaced by iron weights, weaving on Jacquard looms in which weights of lead are used, be placed under the operation of the law concerning lability for accidents in factories.

"3. Resolution of the federal council of December 19, 1887.

"In execution of article five, letter *d*, of the factory law the federal council has resolved:

"ART. 1. Industries in which the following materials are used or are produced, are hereby declared to be industries' which, according to experience produce certain specific diseases:

"1. Lead, its combinations [white lead, sugar of lead, litharge, red lead] and its alloys [type metal, etc.].

"2. Quicksilver and its combinations [corrosive sublimate, nitrate combined with protoxide of mercury, etc.].

"3. Arsenic and its combinations [arsenical acid, arsenious acid, etc.].

"4. Phosphorus [yellow variety].

"5. Gases which cannot be breathed, sulphurous acid, hyponitric acid, saltpetrous acid, nitric acid fumes, hydromuriatic acid, chlorine, bromine, iodine, fluorhydrate, etc.

"6. Poisonous gases, hydrothionic acid, carbon sulphide, carbonic acid gas, etc.

"7. Cyanogen and its combinations.

"8. Benzine.

"9. Aniline.

"10. Nitroglycerine.

"11. Small-pox and similar virus.

"ART. 2. The industries mentioned in article one are those to which is to be applied article three of the law of June 25, 1881, concerning liability for accidents in factories, and article one of that on the extension of such liability, of April 26, 1887.

"ART. 3. This resolution shall take effect January 1, 1888, and can be amended or revised at any time."

Other Countries.

In Austria all cases arising from accidents were until quite recently met only by general provisions of the law. Damages could be obtained from an employer only when he personally caused the accident by his negligence, and not when the accident was caused by a subordinate, unless it could be shown that due care had not been exercised in the choice of the latter. A special law of March 5, 1869, relating to railroads, goes a step further, and assumes the negligence of the company, unless it can prove that the accident resulted from the negligence of the person injured, or was the effect of inevitable external accident [*vis major*]. But while an extension of this principle to factories and the accidents which occur in them, was agitated at different times, no law was passed. In 1880 the government brought in a project of a law governing manufactures which contained the following section:

"When the representative or agent of the employer, by a neglect of the provisions of preceding sections, or by any other fault in carrying out the operations of the factory, causes the death or injury of any laborer, the employer is responsible for the loss resulting and must pay damages measured by the rules of the general civil law."

But the difficulties of the problem deterred parliament from taking any decisive action in the matter, and when, in December, 1882, the government again brought the subject before the parliament, it was with a promise to combine a scheme of accident insurance with the employer's liability. In the subsequent course of affairs it was the latter principle which was emphasized to the exclusion of the former. The whole field of accidents is covered in Austria by the laws relating to insurance.

In France there is no special liability for accidents in factories beyond that created by the common law of the land. The sections of the *code civile* which touch this subject are:

"ART. 1382. Every action of a person whereby another receives injury, binds the person through whose fault the injury was caused, to make satisfaction for the injury.

"ART. 1383. Every one is responsible for the damages which result from his direct acts or his negligence or careleseness.

"ART. 1384. Persons are not only responsible for the damage

which results from their own actions, but also those which arise from the actions of others for whom in general they are responsible, or through goods which may be under their care, etc."

The interpretation of these rules was in the first instance quite strict, though towards the year 1850, a movement began which gradually extended the responsibility of the employers as interpreted by the courts, until the responsibility which was originally the exception became almost the rule. An illustration has become classic in the literature of the subject. Two laborers who had laid down for warmth on the top of a furnace, went to sleep and were burned to death. The court required the owners to pay damages, as they had exercised no precautions to see that the laborers did not succumb to the very obvious temptation to lie down on the furnace.

Such extremes, however, led again to reaction, and the interpretation of the courts became more strict. Yet the necessity of reform was felt, and in a legislative report of 1882 we read, "One and the same case costs an employer 25,000 francs in Paris, 20,000 in Havre, 10,000 in Rouen, 5,000 in Lille and elsewhere 2,000." These and other reasons led various members of parliament to bring in bills on the subject. But it is to be remarked that these projects have largely given prominence to the insurance feature, and that no law creating a special employers' liability has been passed.

In Italy the provisions of the *code civile* quoted in speaking of France, govern all cases of accidents. Early in the last decade several measures were proposed to meet the unsatisfactory conditions which had grown up with the increase of manufactures. One of these was a project of a national insurance institution with voluntary insurance. It became a law July 8, 1883. In conjunction with this law there had been introduced a proposal for an employers' liability law modeled on the German law of 1871. After a somewhat checkered legislative career the whole subject was referred by the ministry to a consulting commission composed of some of the leading men of the nation. The report to the commission was made by Signor Carlo F. Ferraris, the distinguished professor of Padua. He distinguishes two lines of action, first employer's liability, with optional insurance, and, second, obligatory insurance. In his report he pronounces himself forcibly in favor of the second alternative, and the commission adopted his views. More recently a bill has been introduced into the Italian parliament to provide obligatory insurance against accidents. It has not yet become a law.

Of other countries it is to be noted that there is no general employers' liability in Denmark, but that the last session of parliament was occupied with a project of obligatory insurance. The same is true of Sweden. In both of these countries it is probable that such laws will be passed in the near future.

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Wray *v.* Evans, 80 Pa. 105 (1875).
Zurn *v.* Tetlow, 134 Pa. 213 (1890.)

U. S. NAVAL STEAMER, NEWARK. FRONT VIEW.

COMMERCE, NAVIGATION AND SHIP-BUILDING ON THE DELAWARE RIVER.

[The large part taken by some Delaware river ship yards in the building of the new navy has attracted general attention to this industry of our state; while the condition of the commerce of Philadelphia, the causes of the decline, the possibilities of the future, the recent establishment of new steamship lines; the project of a ship canal across New Jersey, the extensive improvements in progress in the river opposite the city, have led the Bureau to make the following investigation. The historical part of the work has been done by Prof. E. P. Cheyney, of the University of Pennsylvania, whose study of industrial history has made him familiar with the sources of information. The description of the process of steel ship-building, including the mode of making and executing contracts with the government, has been prepared by Mr. Lewis Nixon. It was supposed, when the investigation was begun, that complete statistics could be obtained by the Bureau of the exports from Philadelphia from the time of establishing the custom's service, but a thorough inquiry, both in Philadelphia and Washington, reveals the fact that such statistics do not exist except for a comparatively recent period. The earlier returns sent to Washington were sold for old paper, or were deposited in a cellar and destroyed by water. All known sources have been carefully examined. It is believed that the investigation, though not as complete as might be desired, will prove timely and instructive.— CHIEF OF BUREAU.]

THE COLONIAL PERIOD.

When Penn chose the site of the town which was to be the metropolis of his new province, he planned a city in which the various forms of industrial interest should be approximately equal in importance. It was to be a "green country town," the center of an agricultural community; again, its location was placed where high land stretching from one river to another would give the best facilities for commerce, "where most ships may best ride, and load and unload at the bank or key side, without boating or lightering of it". Lastly, he offered prizes for the first woven fabric, so that manufacturing industry might be encouraged. The second of these three interests, however, commerce, soon outstripped the other two, and for a century and a half Philadelphia looked seaward rather than landward. Then, beginning to realize the continent that lay inland waiting for development, she found a new interest in the construc-

tion of internal means of communication, and in opening up coal and iron mines and oil fields. During this latter period, manufacturers also were absorbing more and more energy and capital, while commerce was stationary, notwithstanding its increase at other ports, till in the last fifty years manufacturing has taken the predominating position that once belonged to commerce. During the last year or two, however, there have been such signs of renewed life in commercial interests, that it would seem that the old ideal of a well-balanced condition of industrial activity would at last be realized.

The rapid immigration which followed immediately on the publication of Penn's offers to settlers necessitated an active intercourse with Europe; not only for the transportation of the people themselves, but for providing the articles of daily necessity and even of luxury which the needs and growing wealth of the colonists demanded. Under these inducements to commerce and the early production of a superfluity of food products, the shape the new city took was far different from that in which it had been originally laid out. Whereas its corporate boundaries stretched one mile along the Delaware and two miles backward to the Schuylkill, the actual houses straggled up and down the shore of the Delaware to Kensington and to Southwark, till by the end of the colonial period it measured four miles north and south while it still extended but a few blocks backward from the river.

The products of early Pennsylvania which were in demand in other countries were of six or seven general classes: 1. Wheat, rye, corn, and other grains, and their products, flour, ship-bread and biscuit. 2. Horses, cattle and other live stock, beef and hog products, salted meats, hams, bacon and lard. 3. Lumber of all sorts, especially staves for barrels, for tobacco, sugar and molasses hogsheads, and for wine and rum casks. 4. Flax, hemp and wool. 5. Soap, candles and starch, skins, peltry and tanned leather. 6. In early times tobacco, and, 7, in later times iron. The things in greatest demand here from other places were, in the first place, manufactured goods of all kinds; second, rum, wine and other liquors; third, sugar and molasses; fourth, salt, and, finally, negro slaves and European bound servants.

Under these circumstances, the commerce passing in and out of the Delaware river went in four great lines: 1. Up and down the coast of the continent. 2. To the West Indies. 3. To the British Islands. 4. To the south of Europe, Italy, Spain and Portugal, the Canary, Madeira and Azores Islands. The cargoes sent from Philadelphia on the second of these lines of export, that to the West Indies were principally food products, staves for casks and other lumber, and horses. The West Indies in their entire devotion to the production of the sugar cane came to depend more and more completely on the colonies of the continent for their food, and in no place was this produced in greater abundance and variety than in the agricultural country surrounding Philadelphia.

When Franklin came here from Boston he was astounded at the amount of wheaten bread he obtained for his first investment of three pence at the baker's shop. So wheat and corn, flour, biscuits and ship-bread, salt meats and salt fish were exchanged for return cargoes consisting mainly of rum, molasses and sugar, negro slaves, and gold and silver coin. The slaves were imported into Pennsylvania from Barbadoes, Jamaica and other West India Islands rather than direct from Africa so that they might have been partially acclimated before being subjected to this rigorous climate. The specie was the result largely of illicit trading between the British Islands and the Spanish Main, though Pennsylvania vessels themselves frequently dabbled in the same trade bringing some coffee and logwood, but especially specie from the Spanish settlements.

Vessels leaving Philadelphia for any other one of the continental colonies, Newfoundland, New England, New York or the southern colonies, Maryland, Virginia, North and South Carolina, took either the special productions of Pennsylvania or goods which had been already brought from the West Indies or from Europe. The southern settlements had almost no direct trade with the West Indies, so Philadelphia sent to them, rum, sugar, molasses and salt, as well as her own provisions, receiving in return, rice, tobacco, flax, indigo, ship-building timber, tar and turpentine, and even wheat which was frequently sent to Philadelphia to be ground into flour before being exported. To New England also, imported goods were largely sent, exchanging for the products of the whale and other fisheries, and New England rum.

The third line of exportation was to the south of Europe. In the latter part of the century this became one of the most considerable of all the branches of Philadelphia commerce. It included principally corn, wheat, fish, staves for wine casks and other lumber. These the enterprising shipmasters carried to the Azores and Canaries, to Madeira, to the southern ports of Spain and Portugal, the Mediterranean ports of France and to Italy. They often sold the vessel in one or other of these countries as well as the cargo. The productions which the navigation laws allowed the colonies to buy in European countries were very few, including little else than salt and wine, so the results of such voyages were usually taken to England in money, and there invested in manufactured goods for the home market.

Between the British Isles and Pennsylvania the commercial intercourse was, of course, constant. There were, however, unfortunately but few of our productions in demand in the English market. Hemp, flax and flaxseed, a few skins and furs, some lumber, two or three kinds of drugs, pig iron and an occasional vessel, were almost the only native products which could be sent to England in return for the great mass of manufactured goods which were imported from there. Along with these, of course, went the goods imported into Philadelphia from the

West Indies and other American colonies; sugar and molasses, rice indigo and tobacco, pitch, tar and turpentine, and, above all, gold and silver coin. The balance of trade with Great Britain being steadily and vastly against the colony, the question of making returns was a serious one and caused a continual drain of specie. From England came all the manufactured goods used in the colony, except the most primitive kinds. Silk, woolen and cotton goods of twenty or thirty sorts, manufactured either in England or in some of the continental countries, hardware, glass, metals and earthenware, shoes and gloves, paper and stationery, powder and shot, were only a part of the long list of necessities or luxuries which came over in the cargoes loaded at London, Liverpool or Bristol. Through England also came all East Indian and other oriental goods, tea, spices and China silks. Besides this trade in manufactured goods, frequent vessels from certain English and Scotch, and still more from Irish ports, had as their principal cargo, immigrants, most of whom were brought out on speculation by the ship's captain, who received from them no payment for food or passage money, but, instead, an agreement to allow themselves to be sold for a sufficient term of years to Pennsylvania employers to repay the shipmaster for his expense. Of these "redemptioners" an incredible number came to Pennsylvania and there are scarcely any advertisements more frequent in the Philadelphia newspapers than such as the following: "Lately arrived from Plymouth, in the ship John and Annie, a parcel of likely servants, to be sold reasonable, for money or country produce." This form of importation also supported a considerable trade with Rotterdam and Amsterdam, German immigrants habitually coming to those ports for vessels.

Besides these four forms of direct export and import, "three cornered trips" were quite common. A cargo of flour, beef, pork or barrel staves shipped from Philadelphia was sold in the West Indies and a cargo of their produce immediately loaded for England, where English goods would in turn be bought with the proceeds and shipped for Philadelphia. Similarly goods sent to the south of Europe were frequently sold for cash and this taken to England and invested in goods for the home market. Trips to New England, thence to England and so return, were also occasionally made. Such an embryo carrying trade was not only profitable itself, but a natural outcome of the want of balance in our exchanges. This will appear from the following statistics of commerce for 1769, just before the outbreak of the Revolution:

	Exports to.	*Imports from.*
West Indies,	£178,331	£180,591
South of Europe,	203,752	14,249
Great Britain and Ireland,	26,111	199,906

Direct trade with the West Indies therefore, almost exactly balanced; with the south of Europe the account was vastly in our favor, and with

Great Britain to an almost equal extreme against us. The actual tonnage entrances and clearances however, do not show nearly such a great inequality, so that many of the vessels going to England and many of those coming from the continent of Europe must have carried their returns in money rather than in goods. The following table of tonnage for 1769 shows this relation:

	Entered inwards.	*Entered outwards.*
West Indies,	10,745 tons.	11,959 tons.
South of Europe,	12,521 tons.	12,070 tons.
Great Britain and Ireland,	9,309 tons.	7,219 tons.
Coast of America,	12,453 tons.	11,738 tons.

This last statement is justified also by a count of the number of vessels entering and departing in the next year, 1770, which is as follows:

	Inwards.	*Outwards.*
West Indies,	134	185
South of Europe,	196	155
Great Britain and Ireland,	68	73
Coast of America,	261	302

For the actual quantities and values of the colonial commerce of Pennsylvania, no complete statistics, so far as is known, are in existence, but for a few years the amount of the principal exports are given. The value of the total trade of the year 1769, has already been indicated. We have the values of exports and imports to and from Great Britain during the whole colonial period. These statistics are included in the following tables:

QUANTITIES OF CERTAIN EXPORTS FROM PHILADELPHIA IN CERTAIN YEARS.

	Wheat (bushels).	Flour (barrels).	Bread (casks).	Corn (bushels).	Flaxseed (bushels).	Beef (barrels).	Pork (barrels).	Bar iron (tons).	Pig iron (tons).	Beer (barrels).
1729,	74,800	35,438	9,730							
1730,	37,643	38,570	9,622							
1731,	53,326	56,639	12,436							
1749,	45,775	67,092								
1750,	86,745	82,095								
1751,	76,870	108,695	23,016		69,265					
1752,	86,500	125,960		90,740	70,000	3,431	4,812			
1767,	367,500	198,516	26,052	60,206	84,858	609	6,645	882	813	1,288
1771,	51,699	252,744		259,441	110,412					
1772,	92,012	284,872								
1773,	182,391	265,967								

VALUE OF EXPORTS FROM PENNSYLVANIA TO GREAT BRITAIN AND IMPORTS FROM GREAT BRITAIN INTO PENNSYLVANIA FROM 1697 to 1776.

YEARS.	Exports.	Imports.	YEARS.	Exports.	Imports.
1697,	£3,347	£2,997	1737,	£15,198	£56,690
1698,	2,720	10,704	1738,	11,918	61,450
1699,	1,477	17,064	1739,	8,134	54,452
1700,	4,608	18,529	1740,	15,048	56,751
1701,	5,220	12,003	1741,	17,158	91,010
1702,	4,145	9,342	1742,	8,527	75,295
1703,	5,160	9,899	1743,	9,596	79,340
1704,	2,430	11,819	1744,	7,446	62,214
1705,	1,309	7,206	1745,	10,130	54,280
1706,	4,210	11,037	1746,	15,779	73,699
1707,	786	14,365	1747,	3,832	82,404
1708,	2,120	6,723	1748,	12,363	75,330
1709,	617	5,881	1749,	14,944	238,637
1710,	1,277	8,594	1750,	28,191	217,713
1711,	38	19,408	1751,	23,870	190,917
1712,	1,471	8,464	1752.	29,978	201,666
1713,	178	17,037	1753,	38,527	245,644
1714,	2,663	14,927	1754,	30,649	244,647
1715,	5,461	17,182	1755,	32,336	144,456
1716,	5,193	21,842	1756,	20,091	200,169
1717,	4,499	22,505	1757,	14,190	168,426
1718,	5,588	22,716	1758,	21,383	260,953
1719,	6,564	27,068	1759,	22,404	498,161
1720,	7,928	24,531	1760,	22,754	707,998
1721,	8,037	21,548	1761,	39,170	204,067
1722,	6,882	26,397	1762,	38,091	206,199
1723,	8,332	15,992	1763,	38,228	284,152
1724,	4,057	30,324	1764,	36,258	436,191
1725,	11,981	42,209	1765,	25,148	363,368
1726,	5,960	57,634	1766,	26,851	327,314
1727,	12,823	31,979	1767,	37,641	371,830
1728,	15,230	37,478	1768,	59,406	432,107
1729,	7,434	29,799	1769,	26,111	199,906
1730,	10,582	48,592	1770,	28,109	134,881
1731,	12,786	44,260	1771,	31,615	728,744
1732,	8,524	41,698	1772,	29,133	507,909
1733,	14,776	40,565	1773,	36,652	426,448
1734,	20,217	54,392	1774,	69,611	625,652
1735,	21,919	48,804	1775,	175,962	1,366
1736,	20,786	61,513	1776.	1,121	365

The vessels in which the commerce of Pennsylvania was conveyed were usually owned and for that matter built in Philadelphia. In addition to the familiar square-rigged vessels, the three-masted ship and the two-masted brigantine or brig, a favorite vessel was the snow, the predecessor of the modern bark. It differed from the full-rigged ship in having the third mast very small, provided with one sail only and capable of being lifted out of its setting and laid on deck when circumstances did not favor its use. Ships were seldom of more than 400 tons measurement and frequently less than 100, with occasional instances of only 50 or 60 tons; snows measured from 100 to 300 tons and brigs ranged above and below, generally below 100. Schooners had never more than two masts, and were never over 100 tons burden, while little sloops of 15 tons and upward took a considerable part in the colonial shipping trade.

The European traffic was altogether in the hands of square-rigged vessels, the West Indies trade perhaps evenly divided between the square-rigged and schooner-rigged vessels, while the coasting trade was mainly carried on by the latter. Nevertheless sloops of almost incredibly small size frequently made trips to the West Indies with their flour or other produce, and full-rigged ships occasionally took part in trade with the other continental colonies. Crews varied from as many as twenty-five in the larger vessels to two or three in the smallest, trips of several hundred or even a thousand miles being often made by a crew of three men in a vessel of twenty tons.

Philadelphia vessels, as well as commerce, suffered considerably, both from piracy and from privateering during the successive wars of the eighteenth century. From the latter the British navy did little to protect the colonists, being practically precluded from doing so by the distance of the colonies and the length of the seaboard; and some compensation was found by the Philadelphia merchants, who themselves fitted out privateers, which frequently sent or brought in valuable prizes of French or Spanish vessels. Indeed with piracy also, in the early years of the settlement, it was the common report and belief in England that some of the colonists had only too much sympathy.

The actual number and tonnage of the vessels arriving and departing during the colonial period, as in the case of the articles exported and imported, is known only for occasional years. Such statistics as are available, are given in the following tables:

NUMBER AND TONNAGE OF VESSELS LEAVING AND ARRIVING AT THE PORT OF PHILADELPHIA FOR CERTAIN YEARS.

YEARS.	Number of vessels leaving Philadelphia.	Tonnage of vessels leaving.	Number of vessels arriving at Philadelphia.	Tonnage of vessels arriving.
1719,	128	4,504		
1720,	140	3,982		
1721,	111	3,711		
1722,	96	3,531		
1723,	99	3,942		
1724,	119	5,450		
1725,	140	6,655		
1730,	171	. . . . .	161	
1735,	212	. . . . .	199	
1749 to 1752, an average of	403			
1769,	. . . . .	42,986	. . . . .	45,028
1770,	715	49,654	659	50,901
1771,	554	46,654	537	
1772,	730	46,841	674	
1773,	755	46,972	730	
1774,	897	. . . .	869	
1775, one-half year	387	. . . . .	322	

NUMBER OF EACH KIND OF VESSEL ARRIVING AT PHILADELPHIA FOR CERTAIN YEARS.

YEARS.	Ships.	Snows.	Brigs.	Schooners.	Sloops.	Total.
1735,	52	21	53	73	. . . .	199
1770,	107	40	192	123	196	659
1771,	94	17	147	107	172	537
1772,	110	34	184	139	207	674
1773,	126	29	223	144	208	730
1774,	156	23	251	200	239	869
1775, one-half year,	51	14	118	68	71	322
FROZEN UP IN THE ICE IN THE RIVER.						
1728,	14	3	8	2	8	35

Shipbuilding in Philadelphia began almost coincidently with the settlements under Penn. In his "conditions agreed upon with the settlers," in 1681, he had provided that in clearing the land all good oak trees should be preserved for shipping, and in 1685 it was already reported that "some vessels had been built at Philadelphia and many boats." Before 1700, rope-walks, sail and block-makers' shops, timber yards and other accompaniments of shipbuilding sprang up along the river streets and the ship yards themselves became the conspicuous object to observant visitors which they have ever since remained. They extended at first from just above Market street almost continuously to West's great yard at Vine street wharf. This last lot had been itself obtained by West in part payment for a vessel he built for Penn. The yards were also scattered along south of Market street to Dock creek. The bowsprits of ships on the stocks at some of these yards extended out into what is now Water street. As wharf property became more valuable the ship yards receded northward, and southward from the centre of the town towards Kensington and Southwark, where they long remained and at the former still continue the most characteristic feature of the district.

The kinds of vessels commonly built were of the general types characteristic of the commerce and navigation of the time, and have been sufficiently described above. Pennsylvania-built vessels stood high, both for model and material, and were, as has been already said, frequently sold in Europe and the West Indies. This may have been generally done in the course of ordinary trade, by meeting a chance customer, but a considerable number of vessels, also, were built to fill orders from abroad, and at certain periods vessels built for English or Irish merchants formed an important part of our returns for articles imported thence.

A peculiar kind of vessels, if they can be called vessels, belong especially to the colonial period of Pennsylvania history. These were the large raft-ships built for the purpose of carrying timber to Europe. They were masses of logs fastened together into the shape of a vessel and capable of being navigated to their destination, where they were taken apart and the timber was sold. They bent and twisted considerably in the process of launching, but after reaching the water looked much like any other vessel. They were sometimes composed of as many as 800 logs of timber, sufficient to build six ships of 250 tons each. One, named the "Baron Renfrew," whose measurements were double those of an ordinary seventy-four gun ship, and indicated a capacity of 5,000 tons, reached the English channel safely, but was there wrecked and subsequently towed into various French and English ports in fragments, in the form of rafts of logs. On one of these sections which reached London, was erected the main spar of the original vessel, a single white pine tree ninety feet high. The last of these constructions was built and launched at Kensington in 1774.

The few existing statistics of colonial shipbuilding are included in the following table:

YEARS.	Square-rigged vessels.	Schooners and sloops.	Total number built.	Tonnage.
1722,	. . . .	. . . .	10	428
1723,	. . . .	. . . .	13	507
1724,	. . . .	. . . .	19	959
1769,	14	8	22	1,469
1770,	8	8	16	2,354
1771,	15	6	21	1,307

FOREIGN COMMERCE.

The close of the active operations of the war, in 1781, gave an opportunity for the beginnings of a new commerce for Pennsylvania. In the decade that followed, notwithstanding the difficulties in the way of commercial prosperity, the nominal continuance of the war until 1783, the disordered currency, the dissensions among the states, the want of foreign commercial treaties, Pennsylvania commerce nevertheless became active, enterprising and lucrative. The first inducement to this activity seems to have come from the abundance of natural productions, especially grain and lumber, which Pennsylvania possessed, and which were in demand in other places. The early exports of flour, for instance, were the following amounts, very striking in view of the small population and comparative poverty of the country.

1786,	150,000 barrels.	1792,	420,000 barrels.
1787,	202,000 "	1793,	422,075 "
1738,	220,000 "	1795,	227,341 "
1789,	369,000 "	1796,	196,955 "

Flour, indeed, was the characteristic production of Pennsylvania, as much as rice was of South Carolina or tobacco of Virginia. The burthen of vessels was commonly expressed in barrels of flour, as "a ship of 3,000 barrels," "a brigantine of 1,600 barrels," "a sloop of 500 barrels," "a brig of 150 tons or 1,500 barrels;" and every old print of the vessels in the river shows them heaped high with deck loads of barrels. This flour and similar food products were brought into Philadelphia from the surrounding country in wagons, or floated down the Delaware from a long distance northward, including the Lehigh Valley, or brought down the Susquehanna to its mouth, hauled across the neck of land to the Delaware and thence brought to Philadelphia in small sailing vessels. Similarly lumber for barrel and pipe staves, and for building purposes, cut in the Pennsylvania woods, was sent to the West Indies, and to the Mediterranean ports and Western Islands. Typical cargoes of this early period were as follows:

Brig "Jenny," 50 tons, built in Philadelphia, 1776; to Barbadoes, August 3, 1784, ... 10,000 feet boards.
6,000 staves and headings.
200 barrels of flour.
100 barrels of bread.
6,000 bricks.
20,000 shingles.

Ship "Queen of France," 150 tons, built in Philadelphia, 1781; to Madeira, August 1, 1784, ... 5,326 bushels corn.
1,650 bushels wheat.
481 barrels of flour.
1,700 pipe staves.

But the returns from these simple exports soon provided a surplus of the productions of other countries for the purposes of re-exportation. Cargoes, therefore, became more varied, as the following instances will indicate.

Ship "Friendship," 180 tons, built in Philadelphia, 1783; to Cork, Ireland, July 27, 1784, ... 153 hogsheads tobacco.
59 barrels tar.
7 walnut logs.
70 handspikes.
89,600 barrel staves.

Brig "Greyhound," 52 tons, built in Philadelphia, 1782; to Charleston, South Carolina, July 28, 1784, ... 46 hogsheads spirits.
24 hogsheads sugar.
558 barrels flour.
100 half barrels flour.
100 barrels ship-bread
400 kegs biscuit.
50 tubs steel.
5 boxes merchandise.

Sloop "Lucy," 35 tons, built in Philadelphia, 1783; to New York, August 16, 1784,	92 barrels flour. 5 tierces linseed oil. 9 hogsheads rum. 2 hogsheads sugar. 25 cases gin. 17 quarter casks wine.

In the six months from March 15, 1784, to September 14, 1784, the first period during which regular records were kept, there were 682 vessels that cleared from Philadelphia. The ports to which they were bound were as follows:

To coastwise ports,	374
To West Indies,	174
To Great Britain and Ireland,	44
To other European ports,	90

The cargoes taken out by the 308 vessels which went to foreign ports consisted of some 140 different kinds of articles, the principal of which, as has been already said, were different kinds of grains and their products, and lumber in various forms. Of these the quantities were about as follows:

Corn,	46,216 bushels.	Oats,	25 bushels.
Corn meal,	1,628 barrels.	Oat meal,	8 casks.
Wheat,	7,389 bushels.	Flaxseed,	25,185 barrels.
Wheat flour,	76,782 barrels.	Rice,	931 casks.
Bread,	14,677 barrels.		
Lumber,	233,809 feet.	Scantling,	19,569 pieces.
Planks, single,	240,801	Timber,	826 pieces.
Planks, feet,	7,427	Timber,	107 tons.
Boards,	3,500,000 feet.	Mahogany.	
Headings,	100,000	Lignum vitæ.	
Staves,	1,682,954	Cedar posts.	
Shingles,	6,953,135	Yellow wood.	
Hoops,	18,000	Log wood.	
Scantling,	371,140 feet.		

Of other food products, beef and pork in various forms, dried and pickled fish, butter, potatoes, apples and onions, coffee, cocoa and chocolate, and tea, sugar and molasses, were exported in quantities about in the order of this list. Of liquors, rum, gin, wine, beer, porter and cider, were sent out in quite large quantities. Of metals, some iron, steel, copper and lead, and simple articles made from them were exported, as well as crockery and earthenware. The naval stores—tar, pitch, turpentine and rosin, tobacco and snuff, and raw cotton, which were sent out in such large quantities, were probably all previously imported, as were, of course the wines, coffee, cocoa and sugar. In manufactured goods the export was naturally weakest, as colonial conditions had allowed of no native manufactures, and they had not yet had time to grow up. Nevertheless simple manufactures are well represented. Among them were the following: cordage, cables and hawsers, about 150,000 pounds,

leather, pipes, plows, staves, shoes, canvas, carriages, furniture, cutlery, linens, candles, harness, soap, stills, woodenware, shot, 198,360 bricks, guns, various medicinal roots, such as ginseng, sassafras, snake-root and ginger, with six live horses and eighty-seven live sheep, make up the tale of what must have been a period of most unprecedented activity in the foreign commerce of Philadelphia, and the industries of the adjacent country.

On the 374 vessels that went to other ports in the United States, the cargoes were even more various in character, and of somewhat different prevailing composition. The demand for food products in other American ports was naturally much less than abroad. Nevertheless Pennsylvania's particular products, wheat, flour and bread, held their own well, 32,688 barrels of flour and 3,209 barrels of bread being sent out. Simple manufactures and foreign articles of luxury were the most conspicuous, however; among the former were iron and ironware of all kinds, anchors, vises, nails, kettles, andirons, castings, etc., gunpower, paper, and earthenware, while among the articles brought from other countries and reshipped one finds, above all, liquors, then sugar and molasses, figs, almonds, raisins, lemons and spices, woven goods and queensware. The indications of Philadelphia being a center of distribution—independently of production—are numerous and striking.

The growth of Pennsylvania commerce in its early years was not dependent simply on the usual productions of the country and the normal demands at home and abroad. The European war breaking out in 1792 caused an unusual demand for food products, and the destructive policy of England and France and her allies toward one another's commerce left to America the entire, instead of the partial, provisioning of the West Indies, and a great part of the carrying trade between the various colonies and their mother countries. By various means, the neutrality of the United States was preserved, with certain exceptions, until 1812, and during this period of twenty years, with the exception of the time of embargo and non-intercourse, the export of native American products, and the importation and re-export of foreign goods was extremely active. In the early part of the period Philadelphia had far the greatest part of this commerce, and through it all she preserved a considerable share. The rise and decline of this trade can be traced in the table of values of exports and imports, though the actual statistics of quantities unfortunately cannot be found.

One of the earliest, the most lucrative, and most interesting branches of foreign commerce which grew up at Philadelphia in the years immediately after the Revolution was the China and East India trade. In colonial times the products of those countries came to us, when they came at all, only through the intervention of the East India Company, whose vessels did not of course come all the way here from the East, but landed their cargoes in England, whence they were re-exported to the colonies.

MORNING LIGHT, A CLIPPER SHIP, BUILT IN PHILADELPHIA IN 1853.

The first American ship to make a voyage to China was the "Empress of China" of 360 tons, which left New York on the 22d of February, 1784, arriving at Canton on the 30th of August, and leaving there on her return voyage on the 28th of December. She reached New York again on the 11th of May, 1785.

Before the Empress of China started on a second voyage the new Philadelphia ship "Canton," of 250 tons, commanded by Thomas Truxtun and owned by John Donaldson, William Coxe, Tench Coxe, Walbro Frazer, John Pringle and Thomas Truxtun, all of Philadelphia, sailed for China on the 30th of December, 1785, with a cargo made up of 41 hogsheads and 226 barrels of ginseng and three rolls of lead. She returned in May, 1787, after a favorable and remunerative voyage. In the next month after her return, June, 1787, the ship "Alliance," of 700 tons, commanded by Captain Thomas Read and owned by Robert Morris, sailed from Philadelphia for China On the 6th of December, the Canton left on her second voyage, and on the 12th of the same month the newly built Philadelphia ship "Asia," of 292 tons, under Captain John Barry, left also for Canton. Voyages to China soon came to include Calcutta and sometimes Madras, or the Dutch Islands; while other cargoes were soon taken to and brought from the East Indies direct. The China and East India trade subsequently developed together. Its growth here was steady and Philadelphia for some time was the principal American port for intercourse with the East. Some statistics of arrivals during two periods anterior to the war of 1812 are given in the following table. The absence of arrivals in 1809 is due to the embargo:

	From China.	*From East Indies.*
1790,	2	
1791,	1	1
1792,	1	2
1793,	1	2
1794,	1	2
1805,	4	5
1806,	14	10
1807,	14	13
1808,	8	13
1809,	–	2
1810,	8	4
1811,	6	5

One Philadelphia shipbuilder built five ships for this trade between 1795 and 1810, three of them over 400 tons, the other two over 300 tons—large vessels for that period. The annual vessels for the East usually arrived all within a few days or weeks of one another, and their appearance brought the prevailing commercial character of Philadelphia at that period into striking prominence. The booming of the cannon from the ships announcing their approach up the river, the crowds on the wharves to watch their arrival, the scenes of unloading, the auction sales by which

the cargoes were usually disposed of, the advertisements in the papers of merchants provided with new stocks of oriental goods, all together made a conspicuous event in the year. The goods brought were teas, China and India silks and muslins, shawls, cotton goods of all sorts, indigo and other dyes, hemp, sugar, shellac, hides, saltpetre, etc. These cargoes were often of very great value. The ship Montesquieu, belonging to Stephen Girard and captured by the British off the capes of Delaware in 1813, had a cargo on board valued at one and a half million dollars, and Girard paid the British commander a fine of $180,000 in cash to secure her release. The exports to the East were less numerous, and pretty much restricted to ginseng, lead, raw cotton and specie. Of the last the returns to China had almost entirely to consist, and the amount was very considerable. In the year 1811, the sum of $2,960,000 in silver was shipped from Philadelphia to Canton and Calcutta, supposed to be about one-half the amount exported from the whole United States to Asia. It was taken as follows.

For Canton—		For Calcutta--	
Ship Atalanta,	$500,000	Ship Dorothea,	$475,000
Ship Pekin,	340,000	Ship Atlas,	325,000
Ship South Carolina,	140,000	Ship Superior,	330,000
Ship Pacific	180,000	Ship Coromandel,	250,000
Ship China Packet,	420,000		
Total,	$1,580,000	Total,	$1,380,000

This trade continued to flourish until some time after the war of 1812, when, during the twenties, it gradually died out. Several causes for its decadence have been suggested, one of the most popular being that it was due to the imposition of one-half of one per cent. duty on all auction sales by the Pennsylvania state government. As the goods brought from the East were generally disposed of by auction, this is said to have been a sufficient discouragement to have transferred the trade to New York and Boston. Whatever may have been the cause, Pennsylvania's great imports of Eastern goods have for a long while now been made through one or other of the latter ports, the goods being brought here subsequently in coasting vessels or by railroad. There were thought to be evidences of a revival of the Eastern trade of Philadelphia about the middle of the century. In 1858 two vessels, with a tonnage of 4,007 tons, arrived direct from Calcutta, and in 1859, five with a tonnage of 7,997, but no subsequent development took place, and there is as yet no considerable direct trade between Philadelphia and the East, except a certain amount of export of petroleum.

With the exception of the early China and East India trade, the carrying trade growing out of the European wars, and a pretty steady growth of coastwise commerce, Philadelphia's commercial development cannot be said to have carried out the promise of the period immediately after the Revolution. Its activity continued for some years into

the present century, during which time Philadelphia was, above all, a commercial port. Such men as Stephen Girard, the Walns, Henry Pratt, Robert Burton, were as well known in the commercial world as the Philadelphia shipbuilders of the same period were. The Eastern trade, the West India trade, the European trade, each had its special firms and special vessels; all the active life characteristic of a seaport filled the eastern section of the city, and the foundations were laid for large fortunes, many of which still exist.

The embargo found in port at Philadelphia on the 1st of March, 1808, 86 ships, 60 brigs, 72 schooners, and about 100 sloops and river craft. By the 18th of April these numbers had been raised by subsequent arrivals from foreign ports to 132 ships, 107 brigs, and 112 schooners, a number which must have crowded the river front of the city to a degree we seldom see even now. A chance comparison with present commerce might have some interest, though it can have little statistical value. The number of vessels in harbor on the 20th of February, 1892, just eighty-four years after the embargo, was as follows;

Steamers	37,	. . .	tonnage	44,339,	. . .	largest	2,522	tons,	. . .	smallest	366	tons.
Ships	6,	. . .	"	11,515,	. . .	"	2,652	"	. . .	"	1,200	"
Barks	16,	. . .	"	9,794,	. . .	"	1,118	"	. . .	"	296	"
Brigs	3,	. . .	"	1,137,	. . .	"	503	"	. . .	"	236	"
Schooners	96,	. . .	"	35,630,	. . .	"	1,301	"	. . .	"	96	"
Total,	158	. . .	"	102,415								

That is, in 1808 there were 351 vessels, against 158 in 1892. But of those in the earlier year, probably not one exceeded 400 tons, while by the same system of measurement, many now would exceed 3,000 tons. If the ships in 1808 were taken to average 200 tons, the brigs 100, and the schooners 50, the total tonnage would equal about 40,000 tons, so the capacity is now about two and one-half times as great, though the number of vessels is less than half as many. Of course, too, the embargo period was one of excessive numbers in their home port, while February, 1892, is only a chance period. It is to be noticed that whereas steamers are, of course, a new phenomenon, the popularity of schooners seems to have survived, though that of all square-rigged vessels has declined.

Of the vessels in harbor on the first of January, 1808, some 50 ships and barks, 37 brigs and 28 schooners belonged to Philadelphia, and there were on the stocks on the same time 6 ships, 9 schooners and 26 gunboats in process of construction. According to a classification of the full-rigged ships belonging to Philadelphia, of the first and second class, in 1805, they were ordinarily occupied as follows:

China trade,	15 ships.
East India trade,	8 ships.
British trade,	14 ships.
North of Europe trade,	17 ships.
South of Europe trade,	13 ships.
West India trade,	14 ships.

But this commercial activity did not continue. The number of vessels owned in Philadelphia, the number arriving and departing engaged in foreign commerce, the value of exports and imports, all declined, not only relatively to population, but absolutely; and foreign commerce has never since become anything like so large a constituent of Philadelphia's industry.

Much of the commerce which did exist, however, was of a particularly valuable and reliable character. It consisted of the work done by the well-known "packet lines." From the habit of trading with a particular port, as indicated in the classification of ships given above, it was a short and natural step for a particular vessel, or group of vessels, to undertake regular trips at advertised times to and from certain ports. These lines of vessels, trading regularly and carrying both freight and passengers, were known as "packet lines." In addition to a large number of such lines established between Philadelphia and other American ports, which will be described under the heading of coastwise commerce, several were established at various times with foreign ports. Between Philadelphia and Liverpool there came to be four lines. The first to be established, as it was the longest continued and the best known, was Cope's line, composed generally of four or five ships, one of which sailed from Philadelphia on the 20th of each month, and another from Liverpool on the 8th of each month. It was founded in 1821, and ran its packets continuously till 1874. The first vessels were the Alexander, Montezuma and Tuscarora. Subsequently the Algonquin, launched April 9, 1823; the Lancaster, Monongahela, Susquehannah, Shenandoah, Saranac, Wyoming and Tonawanda were in the line, though seldom more than five at a time, the older ships being disposed of as new ones were added. They varied in burden from about 500 tons to 1,200. Each ship usually made three voyages a year, a single trip taking from 18 to 60 days. But two vessels were lost in the whole history of the line, one being struck by lightning and burned, the other wrecked on the Bahamas. They took out and brought back mixed cargoes, and before the competition of ocean steam vessels had brought down rates, they were very lucrative, the price of freight running as high as $10 per ton, and passenger fare being at one time as much as $133.33. As a typical cargo of the packets may be taken that of the Wyoming on her first trip from Philadelphia, January 30, 1846:

Flour, 6,279 bbls.
Wheat, 10,272 bus.
Clover seed, 31 hhds and 80 tierces.
Wool, 143 bales.
Feathers, 17 bales.
Stearine, 53 bbls.
Whips, 1 case.
Walnut and maple veneers, 25,000 ft.
A number of smaller articles.

At another period, one locomotive was taken out on each of several successive trips. After the great emigration from Europe began, in 1846, these packets did a very large passenger traffic.

A second and a third line were started in 1823 and 1824 between Phil-

WYOMING, A PACKET, BUILT IN PHILADELPHIA IN 1846.

adelphia and Liverpool, a vessel of the former leaving Philadelphia on the 5th and Liverpool on the 25th of each month; and one of the latter, sailing by way of Savannah, on the 20th of each month. The vessels of these lines were all full-rigged ships. The first vessels of the two lines were named as follows:

Manchester, Sarah Ralston, Plato, Philadelphia, Florida, Julius Cæsar, Colossus, Courier, Delaware.

In 1850 there were four complete lines between Philadelphia and Liverpool. A few years before that time, there had been, simultaneously, three lines to Liverpool, one to Bremen and one to the West Indies, running regularly. The vessels of the lines running from Philadelphia were almost all built at our own shipyards and were excellent specimens of shipbuilding skill, the requirements of passengers, freight, speed and safety all having to be considered. Their sailing was remarkably uniform, and of such commerce as there was at Philadelphia during the middle decades of the century, these packet lines carried the most and the best. After 1838 the ocean steam vessels entered into a competition with the sailing packet lines, which made them less and less lucrative and finally led to their abandonment, the last regular sailing from Philadelphia being discontinued, as already stated, in 1874.

The only remaining important characteristic of Philadelphia's foreign commerce has been the petroleum trade. The export of this great American product began at Phildelphia in 1861, when the methods of refining crude petroleum and its value for illuminating purposes came to be known. The first full cargo cleared through the custom house was 1,329 barrels of crude petroleum in the American brig "Elizabeth Watts," 224 tons, on the 19th of November, 1861, although before this time several small shipments of refined oil had been made in the same vessels as other goods. The subsequent exports have been of enormous extent and increasing quantity. The annual shipments from Philadelphia have been as follows:

Years.	Gallons.	Years.	Gallons.	Years.	Gallons.
1861, ...	86,400	1872, ...	56,306,063	1883, ...	79,505,430
1862, ...	2,683,902	1873, ...	86,843,013	1884, ...	119,268,919
1863, ...	5,206,607	1874, ...	74,154,689	1885, ...	151,756,812
1864, ...	7,760,148	1875, ...	64,104,300	1886, ...	152,641,044
1865, ...	12,156,202	1876, ...	65,881,610	1887, ...	163,416,560
1866, ...	28,605,321	1877, ...	49,166,960	1888, ...	134,750,778
1867, ...	28,896,160	1878, ...	75,308,720	1889, ...	161,635,460
1868, ...	40,505,620	1879, ...	89,243,110	1890, ...	164,684,578
1869, ...	83,145,155	1880, ...	54,673,946	1891, ...	200,530,023
1870, ...	49,889,737	1881, ...	110,956,807		
1871, ...	55,901,590	1882, ...	85,931,595		

During the same period the proportions shipped from Philadelphia, New York, Baltimore and Boston have been of some interest. During

each year, of all the amount shipped from the United States, the percentages have been as follows:

Years.	Philadelphia.	New York.	Baltimore.	Boston.	Years.	Philadelphia.	New York.	Baltimore.	Boston.
1861, ...	7	93			1877, . . .	15.3	70.6	14.1	
1862, ...	23	64	1.5	9	1878, . . .	23.8	64.4	11.8	
1863, ...	19	70	3.2	7.2	1879, . . .	22.4	71.8	5.8	
1864, ...	24	67	3	5	1880, . . .	18.	77.4	4.6	
1865, ...	42	49	3	5	1881, . . .	23.2	72.8	4	
1866, ...	43	50	3.4	2.3	1882, . . .	18.1	79.5	2.4	
1867, ...	42	49	2	3	1883, . . .	16.6	81.1	2.3	
1868.					1884, . . .	24.1	73.1	2.8	
1869.					1885, . . .	29.8	68.1	2.1	
1870.					1886, . . .	28.8	69.	2.4	
1871.					1887, . . .	30.3	67.8	1.9	
1872.					1888, . . .	26.5	72.1	1.4	
1873.					1889, . . .	26.5	72.03	1.47	
1875.					1890, . . .	25.82	71.92	2.26	
1875, ...	30.6	57.6	11.8		1891.				
1876, ...	29.3	52.7	18						

The vessels employed in this export were for a long time only such as happened to take charter cargoes and were naturally of a very miscellaneous character. The 345 vessels taking out the shipments of 1871 included 61 ships, 233 barks, 47 brigs and 4 schooners, belonging to a dozen or more separate countries. Latterly, however, tank steamers taking the oil in bulk and belonging largely to the great oil producing, shipping and refining companies, have to a great extent taken the place of the earlier miscellaneous fleet of sailing vessels.

The ports to which the petroleum is sent include almost every considerable seaport of Europe, Asia and Africa, as well as some of the West Indies and South America. Taking the year 1871, again as typical, the petroleum went to 64 ports in 24 different countries. Some of those which took the largest amounts were the following:

Ports.	Gallons.	Ports.	Gallons.	Ports.	Gallons.
Antwerp, . .	14,545,264	Cork, . . .	2,729,789	Havre, .	1,668,187
Bremen, . .	8,513,882	Gibraltar, .	2,344,266	Marseilles, .	1,209,064
Hamburg, . .	6,182,476	London, . .	1,748,316	Elsinore, . .	1,141,279
Rotterdam, .	2,967,040	Stettin. . . .	1,676,596	Dunkirk, . .	817,521

But the question of greatest interest connected with the commerce of Philadelphia, certainly the one most debated, is what is known as the "decadence" of commerce at this port. Undoubtedly there was a time when Philadelphia was the chief commercial city of the American continent. This position, however, she long ago lost and the history of her foreign commerce has been one of stagnation, even at times of

retrogression. If this condition has ever been reversed, it has only been in the very most recent times, and the fact remains that through three-quarters of a century, while other ports were advancing in foreign commerce, Philadelphia was dropping behind. Why is this so? What was the cause for the decadence of our commerce? This question has received a number of answers, the more serious of which are analyzed below. They all fall into one or other of two classes, first, the insuperable difficulties arising from the geographical location of the city; second, the voluntary choice, acquiescence or neglect of the people.

I. The Location of the City.

1. The Bad Position on the Atlantic Seaboard.

It is declared that it is too far south for the natural entrance to the continent, and instead of lying between the New England and the Middle States, the vigorous part of the country, it lies far down inside of the latter group.

2. The Greater Distance from Europe.

It is pointed out that the countries of Europe with which our commerce principally exists lie far to the north, while Philadelphia's southern and inland position brings her to a greater distance from them than New York or Boston are.

3. The Bad Harbor.

Philadelphia lies one hundred and twenty miles from the sea, in a river having several bends, numerous shoals, and liable in winter to obstruction from fixed or floating ice. It is widely believed that this has been the one great obstacle in the way of her commercial prosperity, this reason having been given from at least as early a period as 1810. On the basis of this being the principal difficulty, strenuous efforts have been made from quite early times to obviate its difficulties. These plans have consisted principally in developing to a high extent the skill and *esprit* of the pilots, placing buoys, light houses, harbors of refuge, ice breakers and the Breakwater at the critical points of the course of the river, and in putting on the river ice-boats to break up that obstruction. The comparative failure of these means seems to indicate either that this natural difficulty is in fact insuperable, or else that the cause of commercial decadence lies in some one or more other difficulties.

4. The Bad Relation to the Interior of the Country.

Many persons have believed that the great key to commercial success has been either staple natural productions or access to the great west. The ports which could export most readily the products of the western country would become the principal seaports of the country, leaving a second grade of success only to those which control some great staple

produced in their immediate vicinity. To the first class belonged New Orleans, lying at the mouth of the Mississippi, and New York, drawing the productions of the west through the Erie canal, opened in 1825. To the second belonged Charleston, shipping cotton, rice and tobacco from the adjacent states, and Boston, exporting the products of the New England fisheries of various kinds. Philadelphia belonged to neither of these classes, having, after the great demand for wheat was over, no sufficient staple of production in her immediate vicinity, and cut off from cheap access to the west by the Allegheny range of mountains. According to this view, the strenuous efforts made to perfect the system of turnpike roads, and to build a state system of canals and railroads, was as vain a contest with the natural deficiencies of location as the effort to overcome the difficulties of the harbor. This theory was expressed in a thoughtful article in a Philadelphia commercial journal as early as 1822, while commercial decay was still a new phenomenon and while the Erie canal was still only in process of construction. It is only fair to say that now that railroads have long superseded canals, and the shortest rail route from tidewater to the Great Lakes is that from Philadelphia through Pennsylvania, the reasoning does not seem so conclusive as it might have a half century ago.

II. The Personal Choice or Neglect of the People.

1. Devotion of Capital and Energy to Other Interests.

It has been frequently said that Philadelphia capital and enterprise has been so largely diverted to the development of coal and iron mines, the building of canals, turnpikes and railroads, and, lastly, to manufactures, that there was not enough left to develop shipping and commercial interests. It was said that Philadelphians were not satisfied with the low profits obtainable for commerce when the enormous gains of the period of the European wars was over, and that they turned their investments into directions that promised more immediate and larger returns. In 1847, it was estimated that there had been built in Pennsylvania, principally by Philadelphia capital, about 400 miles of canals and 500 miles of railroads, while about $34,000,000 had been spent in the coal trade and thirty or forty million dollars more on turnpike roads and other such improvements. Such great expenditures, surpassing many times over those in the manufactures of New England, or the shipping of New York, left little in the way of either capital or enterprise for commerce.

2. Injurious Legislative Regulations.

An instance of this asserted cause of decadence has already been given in the case of the duty on auction sales and its effect on the China and East India trade. Another one is to be found, it is said, in the one-half pilotage regulations, by which it was early ordered, for the purpose

of encouraging the pilots, that all vessels should pay half-pilotage fees to the board of port wardens even when they took no pilot on board. Still another instance is said to have been the unusually stringent quarantine regulations of Philadelphia, though her experience with the yellow fever in the latter years of last century and the early years of this would seem quite sufficient to account for the stringency without attributing it to the dogmatism of the state legislature. This explanation dates from as early a period as 1805.

3. Discrimination by Railroads.

It has been argued that the interests of the great railroad corporations, long controlling Philadelphia's interior trade, have been such as to lead them to use their influence to divert commerce from Philadelphia rather than to develop it. It is said that they obtained the control of roads in New Jersey, Delaware and Maryland under such terms that it was necessary and profitable to carry the productions of Pennsylvania and the west over these roads to New York and to Baltimore, rather than to deposit them at the nearest and most natural shipping point—Philadelphia. This theory for the decadence of our commerce has been especially popular in comparatively recent years.

4. The Natural Character of Philadelphia People.

Lastly, it has been attributed to the unenterprising character of the people, making them unwilling to run any risks, unable to take any policy looking beyond the present day, and disinclined to the necessary effort to win success in spite of difficulties. An evidence of this is given in the unwillingness of Philadelphia bankers and financial institutions to give common facilities for commercial operations, such as advances on bills of lading for articles exported to Europe. Another evidence is supposed to be found in the slowness and smallness of national appropriations for harbor improvements obtained by Philadelphia influence from Congress or the state legislature. Still another is in the willingness of Philadelphia people to be instructed, overruled and victimized by a few prominent individuals and corporations. This whole point is naturally more popular in other parts of the country than it is in Philadelphia.

The amount and character of the foreign commerce of Philadelphia since the Revolution can be gathered from the following tables of statistics, which have been constructed with great labor and care, and probably represent the best that our official statistics of the past, frequently badly collected and always badly preserved, can now give us. The tables of foreign commerce are five in number: (1) the number and tonnage of vessels arriving at and departing from the port of Philadelphia in each year; (2) the tonnage registered at Philadelphia, that is, the total tonnage in each year of all vessels whose papers are taken out

from Philadelphia and which are engaged in foreign trade; (3) the values of exports and imports in each year, the former divided into exports of domestic productions and re-export of foreign productions for certain years; (4) duties on imports and drawbacks on re-exports of foreign goods for early years, the record of the values of imports for the period preceding 1821 and distinction of foreign and domestic goods preceding 1803 having been lost for all the ports of the United States; and (5) amounts of articles of domestic production exported from Philadelphia in each year. No general commercial records were kept by the United States government until after 1821. They were then kept by the bureau of statistics of the treasury department, but were for a long time quite incomplete and the various customs districts were not generally differentiated. This last change, however, was introduced in 1857, and since then commercial statistics have been gradually brought to their present state of comparative fullness. For earlier periods, therefore, reliance has had to be placed on such local records as could be disentombed from the Philadelphia custom house, pieced out by matter gathered from contemporary commercial newspapers and other publications, while for many years, as will be seen, no reliable statistics at all have been discovered. Some words of explanation and comment are given at the end of each table.

NUMBER AND TONNAGE OF VESSELS, ARRIVING AT AND DEPARTING FROM PHILADELPHIA, FROM OR TO FOREIGN PORTS.

	ENTRANCES.		CLEARANCES.	
	Number.	Tonnage.	Number.	Tonnage.
1784.				
1785,	501			
1786.				
1787,	596			
1788,	411			
1789,	324			
1790,	639			
1791,	595			
1792,	656			
1793,	655			
1794,	618			
1795,	779			
1796,	858			
1797,	641			
1798,	459			
1799,	443			
1800,	536			
1801,	667			
1802,	653			
1803,	611			
1804,	498		618	
1805,	520		617	
1806,	704		730	
1807,	701		712	
1808,	298			
1809,	351		590	
1810,	405		497	

NUMBER AND TONNAGE OF VESSELS, &c.—*Continued.*

	ENTRANCES.		CLEARANCES.	
	Number.	Tonnage.	Number.	Tonnage.
1811,	500			
1812,	323			
1813,	74			
1814,	43			
1815,	487			
1816,	538			
1817,	532	. . . . .	472	. . . . .
1818,	576			
1819,	450			
1820,	479			
1821,	441			
1822,	494	85,926	. . . . .	76,591
1823,	482			
1824,	501	81,555	. . . . .	82,226
1825,	484		. . . . .	
1826,	482	87,034	. . . . .	73,889
1827,	459	78,712	. . . . .	72,850
1828,	450	88,670	. . . . .	67,699
1829,	374	73,454	. . . . .	57,466
1830,	415	77,016	. . . . .	67,829
1831,	396	80,058	. . . . .	72,745
1832,	428	81,939	. . . . .	60,857
1833,	474	92,050	. . . . .	61,487
1834,	430			
1835,	416	78,993	389	68,023
1836,	421	84,484	350	64,019
1837,	438	91,715	332	63,469
1838,	428	83,123	337	62,438
1839,	521	111,393	405	77,699
1840,	444	87,702	459	83,628
1841,	498	99,070	455	83,523
1842,	465	94,544	426	78,920
1843,	*255	47,944	275	47,472
1844,	447	89,529	453	79,277
1845,	424	91,313	404	76,258
1846,	398	88,048	424	84,899
1847,	621	139,774	583	143,143
1848,	524	119,787	476	98,088
1849,	606	142,623	539	120,327
1850,	537	132,370	479	111,618
1851,	581	159,636	530	140,174
1852,	581	178,364	472	139,932
1853,	589	183,944	514	151,685
1854,	538	191,673	472	170,100
1855,	549	185,975	455	142,386
1856,	533	173,178	412	129,739
1857,	546	189,102	423	141,020
1858,	474	156,671	369	119,878
1859,	553	180,421	435	125,657
1860,	561	185,162	454	135,037
1861,	566	183,408	547	179,358
1862,	555	171,882	585	197,449
1863,	613	194,443	607	201,438
1864,	618	188,938	505	158,738
1865,	531	159,579	449	142,562
1866,	698	222,952	627	230,815
1867,	776	286,735	751	295,516
1868,	813	277,440	798	297,089
1869,	910	292,595	761	271,511
1870,	865	300,006	776	282,639
1871,	954	369,616	828	330,743
1872,	1,025	417,911	890	405,312
1873,	1,048	466,817	944	450,199
1874,	1,193	657,045	1,222	689,230

* For nine months.

NUMBER AND TONNAGE OF VESSELS, &c.—*Continued.*

	ENTRANCES.		CLEARANCES.	
	Number.	Tonnage.	Number.	Tonnage.
1875,	1,033	582,295	1,065	624,185
1876,	1,385	844,294	1,334	826,054
1877,	1,285	810,633	1,239	802,306
1878,	1,319	853,027	1,374	905,990
1879,	1,840	1,315,649	1,624	1,221,048
1880,	1,825	1,391,312	1,583	1,240,364
1881,	1,374	1,076,635	1,248	1,004,557
1882,	1,313	1,055,961	1,156	969,163
1883,	1,085	857,292	965	791,367
1884,	1,061	776,927	869	660,338
1885,	1,230	1,038,167	1,055	921,276
1886,	1,348	1,155,066	1,013	895,486
1887,	1,398	1,290,762	1,063	981,840
1888,	1,296	1,170,528	973	879,070
1889,	1,230	1,104,032	975	874,051
1890,	1,416	1,410,640	1,104	1,119,454
1891,	1,308	1,351,466	997	991,963

The number of arrivals and departures down to 1843 are for the calendar years, those subsequent to that date for the fiscal year ending on June 30. The small number of arrivals and absence of clearances in 1808 was due to the embargo which effectually prevented the departure of vessels bound from Philadelphia to foreign ports. In other years their absence in the list is simply from absence of discoverable statistics. The small number in 1789 is due to imperfect statistics. The diminished numbers in 1812, 1813 and 1814, was due to the war with England then in progress, one incident of which was the almost complete blockade of the mouth of the Delaware. Taking an average of the annual arrivals for the decade 1790–1799, the number is about 634, a number not reached again in a similar average until 1860–1869, when it reached 664. From 1815 to 1860 the annual number of arrivals and clearances remained almost absolutely stationary, indicating a very great stagnation in trade. This is slightly modified however by the increasing average size of the vessels after about 1840; the number of vessels in the decade 1840–1849, having been about tripled in the period 1880–1889, but the corresponding tonnage having increased somewhat more than tenfold. The number of arrivals and departures began to increase materially about 1860, and has continued on the whole to increase ever since; the average number of arrivals for the last three decades being, 1860–1869, 664; 1870–1879 1,175, and 1880–1889, 1,316, while the last average tonnage is a little over a million tons a year.

TONNAGE OF VESSELS REGISTERED AT PHILADELPHIA, ENGAGED IN FOREIGN TRADE.

Years.	Tonnage.	Years.	Tonnage.
1791,	53,898	1842,	42,891
1792,	65,212	1843,	39,445
1793,	60,925	1844,	40,295
1794,	67,895	1845,	39,274
1795,	83,624	1846,	39,673
1796,	90,569	1847,	43,209
1797,	88,401	1848,	48,850
1798,	85,477	1849,	53,821
1799,	90,944	1850,	64,205
1800,	95,632	1851,	69,425
1801,	109,036	1852,	67,739
1802,	64,637	1853,	72,712
1803,	67,629	1854,	74,951
1804,	71,199	1855,	77,441
1805,	77,239	1856,	58,871
1806,	86,728	1857,	59,404
1807,	93,993	1858,	59,923
1808,	94,659	1859,	57,859
1809,	106,622	1860,	67,094
1810,	109,629	1861,	76,453
1811,	78,518	1862,	73,404
1812,	71,281	1863,	57,486
1813,	64,537	1864,	54,500
1814,	64,183	1865,	46,025
1815,	77,199	1866,	52,506
1816,	77,731	1867,	57,130
1817,	80,513	1868,	63,438
1818,	58,201	1869,	55,526
1819,	59,626	1870,	51,255
1820,	59,458	1871,	47,199
1821,	59,296	1872,	43,863
1822,	61,237	1873,	54,829
1823,	61,409	1874,	65,707
1824,	62,771	1875,	73,346
1825,	65,590	1876,	73,254
1826,	63,443	1877,	78,051
1827,	61,700	1878,	79,243
1828,	66,840	1879,	57,649
1829,	50,235	1880,	53,913
1830,	47,979	1881,	56,083
1831,	51,294	1882,	53,023
1832,	45,956	1883,	69,262
1833,	49,022	1884,	66,425
1834,	51,441	1885,	67,818
1835,	51,588	1886,	64,243
1836,	51,035	1887,	58,399
1837,	39,056	1888,	61,552
1838,	42,266	1889,	53,030
1839,	48,569	1890,	60,630
1840,	52,268	1891.	
1841,	47,380		

The ownership at Philadelphia of vessels engaged in foreign trade has been decidedly less progressive than the commerce entering into and leaving the port, the diminution of American-owned shipping being a fact which is common to all our seaports. The largest amount of shipping ever registered at Philadelphia was in the year 1810 and the next largest in the year 1801, while the amount now owned is actually more than a third less than in the first year of the century.

There was a very evident decline in this respect during the years of the civil war, losses of shipping under the American flag being so numerous as to lead a great many owners to sell their vessels. In the six months ending with December, 1863, alone, 158 vessels returned their surrendered registers through America's consuls abroad and of these an appreciable number were vessels previously owned and registered in Philadelphia.

VALUE OF EXPORTS OF DOMESTIC AND OF FOREIGN PRODUCTIONS AND OF IMPORTS, AT THE CUSTOMS DISTRICT OF PHILADELPHIA.

Years.	Domestic exports.	Foreign exports.	Total exports.	Imports.
1791,			$3,436,093	
1792,			3.820,662	
1793,			6,958,836	
1794,			6,643,092	
1795,			11,518,260	
1796,			17,513,866	
1797,			11,446,291	
1798,			8,915,463	
1799,			12,431,967	
1800,			11,949,679	
1801,			17,438,193	
1802,			12,677,475	
1803,	$4,021,214	$3,504,496	7,525,710	
1804,	4,178,713	6,851,444	11,030,157	
1805,	4,365,240	9,397,012	13,762,252	
1806,	3,765,313	13,809,389	17,574,702	
1807,	4,809,616	12,055,128	16,864,744	
1808,	1,066,527	2,946,803	4,013,330	
1809,	4,238,358	4,810,883	9,049,241	
1810,	4,751,634	6,241,764	10,993,398	
1811,	5,694,447	3,865,670	9,560,117	
1812,	4,660,457	1,313,293	5,973,750	
1813,	3,249,623	327,494	3,577,117	
1814.				
1815,	3,659,551	1,024,368	4,593,919	
1816,	4,486,329	2,709,917	7,196,246	
1817,	5,538,003	3,197,589	8,735,592	
1818,	5,045,901	3,713,501	8,759,402	
1819,	2,919,679	3,374,109	6,293,788	
1820,	2,948,879	2,794,670	5,743,549	
1821,	2,832,387	4,559,380	7,391,767	8,158,922
1822,	3,575,147	5,472,655	9,047,802	11,874,170
1823,	3,139,809	6,477,383	9,617,192	13,696,770
1824,	3,182,694	6,182,199	9,364,893	11,865,531
1825,	3,936,133	7,338,848	11,269,981	15,041,797
1826,	3,158,711	5,173,011	8,331,722	13,551,779
1827,	3,391,296	4,184,537	7,575,833	11,212,965
1828,	3,116,001	2,935,479	6,051,480	12,884,408
1829,	2,617,152	1,472,783	4,089,935	10,100,152
1830,	2,924,452	1,367,341	4,291,793	8,702,122
1831,	3,594,302	1,919,411	5,513,713	12,124,083
1832,	2,008,991	1,507,075	3,516,046	10,678,358
1833,	2,671,300	1,407,651	4,078,951	10,451,250
1834,	2,031,803	1,957,943	3,989,746	10,479,268
1835,	2,416,099	1,323,176	3,739,275	12,389,937
1836,	2,627,651	1,343,904	2,971,555	15,068,233
1837,	2,565,712	1,275,887	3,841,599	11,680,111
1838,	2,481,543	995,608	3,477,151	6,260,371
1839,			5,299,415	15,050,715
1840,			6,820,145	8,464,882

VALUE OF EXPORTS AND IMPORTS—*Continued.*

YEARS.	Domestic exports.	Foreign exports.	Total exports.	Imports.
1841,			$5,152,501	$10,346,698
1842,			3,770,727	7,385,858
1843,			2,354,948	3,760,630
1844,			3,535,246	7,217,367
1845,			3,574,363	8,159,227
1846,			4,751,005	7,989,396
1847,			8,544,391	9,587,516
1848,			5,732,333	11,147,584
1849,			5,343,421	10,645,500
1850,			4,501,606	12,066,154
1851,			5,356,039	14,168,751
1852,			5,828,571	14,785,917
1853,			6,527,996	18,834,410
1854,			10,104,416	21,359,306
1855,			5,274,338	15,309,985
1856,			7,144,488	16,585,685
1857,			7,135,256	17,890,369
1858,			5,947,241	12,890,369
1859,			5,298,095	15,603,769
1860,			7,839,286	14,531,352
1861,			10,277,938	8,004,161
1862,			11,518,970	8,327,976
1863,			10,628,968	6,269,530
1864,			13,664,862	9,135,685
1865,			12,582,162	5,645,755
1866,			17,867,716	7,331,261
1867,			14,442,398	14,071,765
1868,			15,706,445	14,218,365
1869,			15,872,249	16,414,535
1870,			16,694,478	14,952,371
1871,			28,688,551	20,820,374
1872,			20,484,803	26,824,333
1873,			29,683,186	29,186,925
1874,			29,878,911	25,004,785
1875,			31,836,727	24,011,014
1876,			59,539,450	21,000,000
1877,			37,823,356	20,126,032
1878,			48,362,116	21,048,197
1879,			50,685,838	27,224,549
1880,			46,589,584	38,933,832
1881,			41,162,957	29,764,278
1882,			34,529,459	37,666,489
1883,			38,662,434	32,811,045
1884,			36,891,605	31,990,309
1885,			37,281,739	33,365,242
1886,			33,607,386	37,997,005
1887,			33,813,024	39,570,687
1888,			28,012,879	45,020,132
1889,			29,183,468	50,996,802
1890,			36,478,554	56,057,013
1891,			42,845,724	62,438,219

The values of exports and imports are for the calendar years.

Previous to 1791 there are no records in existence. Exportation and importation was practically suspended in the year 1814 on account of the war. No records of the values of imports exist previous to the year 1821. Between 1791 and 1803 the values of the exported domestic goods and and re-exported goods of foreign production are not distinguished, and after 1838 the latter became unimportant, as there was little imported to be exported again, the amounts now for a long time having been absolutely insignificant. The defect in the case of early imports and foreign exports is partially made up by the figures given in the next table.

The large amounts of these early exports are very striking. The value of exports in 1796 was not again reached for seventy years, a period in which the population and wealth of Philadelphia had been increased many fold. Down to the war of 1812 the average of yearly exports was considerably above ten million dollars, while for the whole remainder of the first half of this century the average was below five millions. As previously explained, however, this was due to the abnormal European condition, and the almost equally striking rise in the value of exports and imports during the last two decades has in it far more elements of permanency. The large early exportation moreover was only one stage of a carrying trade, as is evident from the relative proportions of it which are of foreign and those of domestic production, while modern exportation is altogether of articles of native production.

YEARS.	Duties on foreign merchandise imported.	Drawbacks on foreign merchandise re-exported.
1791,	$1,475,428	$8,976
1792,	1,138,863	37,753
1793,	1,926,337	102,659
1794,	2,000,091	502,447
1795,	3,053,109	752,550
1796,	3,646,271	1,586,065
1797,	2,907,894	1,086,839
1798,	2,086,714	1,018,127
1799,	2,224,313	955,?64
1800,	3,181,101	1,785,109
1801,	3,702,898	1,540,701
1802,	2,727,365	1,297,662
1803,	2,240,715	561,041
1804,	3,507,038	872,238
1805,	3,652,387	1,319,869
1806,	5,100,657	2,052,551
1807,	5,197,806	2,012,543
1808,	2,599,673	928,568
1809,	2,318,699	894,984
1810,	3,332,377	879,527
1811,	2,364,635	510,328
1812,	2,474,990	378,936
1813,	503,593	185,821
1814,	277,757	3,227
1815,	7,199,699	95,806
1816,	6,285,455	746,636
1817,	4,307,790	702,819
1818,	4,540,360	788,574
1819,	3,848,630	570,274
1820,	2,703,402	555,703
1821,	2,719,996	474,394
1822,	3,648,745	310,956
1823,	3,991,687	612,037
1824,	4,311,926	939,322
1825,	5,270,030	998,778
1826,	5,183,724	1,251,405
1827,	4,188,915	1,053,105
1828,	5,082,344	802,474
1829,	3,574,816	708,970
1830,	3,542,977	516,311
1831,	4,372,533	326,607
1832,	3,501,397	402,972
1833,	2,985,278	697,927
1834,	2,111,837	295,870
1835,	2,506,281	101,812

This table is given to fill out the deficiencies of the statistics of the previous one. Values of imports being missing until 1821, the duties on these imports are the only testimony to their amount. Judging from the average of the years immediately following 1821 the average duty was about 25 per cent. of the values of the imports, and a rough estimate of the latter for 1791 to 1821 could therefore be made by multiplying the amount of import duty for the year by four. Similarly the drawbacks on goods re-exported will indicate how much of the importation of the year was intended for re-export and how much of the export was of goods of foreign production.

The following table gives the results of an inquiry made by the United States engineer in charge of the improvements of the river

Delaware and tributaries. The amounts of exports and imports of foreign goods were found by personal inquiry from the shippers and consignees of goods and are expressed in gross tons.

A similar table will be given from the same source under the subject of coastwise commerce.

WEIGHT AND VALUE OF GOODS IMPORTED AND EXPORTED AT THE CITY OF PHILADELPHIA, DURING THE CALENDAR YEAR 1890.

IMPORTS.	Tons.	EXPORTS.	Tons.
Drugs and chemicals,	62,719	Corn,	428,283
Groceries and provisions,	8,261	Wheat,	18,900
Flour,	3,939	Flour,	84,102
Cement,	27,600	Cars and locomotives,	7,360
Clay,	7,493	Coal,	299,413
Coal,	2,549	Cotton,	8,660
Cotton and cotton fabrics,	1,288	Glucose,	1,957
Hemp, jute and flax,	3,940	Iron, crude and manufactured,	770
Wool and woolen fabrics,	9,820	Oil cake,	25,500
Glass,	540	Mineral oil and products,	559,000
Fruits,	26,600	Other oils,	200
Fertilizers,	4,566	Beef, pork and products,	35,470
Chalk,	15,150	Grass seeds,	351
Asphaltum,	8,240	Groceries and provisions,	2,770
Rags,	3,086	Sugar and syrup,	10,220
Plaster of Paris,	8,790	Tobacco,	3,215
Salt,	14,270	Lumber,	15,300
Tin,	49,709	Miscellaneous,	1,300
Iron ore,	686,682		
Iron, manufactured,	21,016	Total,	1,502,771
Flax seed,	6,750	Value,	$36,462,951
Sugar and molasses,	445,000		
Tobacco,	450		
Nickle and copper ore,	300	Passengers arriving from foreign countries,	25,322
Pitch,	2,260	Passengers departing for foreign countries,	5,741
Wines and liquors,	990		
Miscellaneous,	2,604		
Total,	1,424,162		
Value,	$56,057,011		

COASTWISE COMMERCE.

While Philadelphia, as a port of foreign commerce, has been sinking in importance as compared with other seaports, and while foreign commerce has been sinking in relative value among Philadelphia's industries, the same has been by no means true of her coastwise commerce. With many changes of character and periods of slower and of more rapid growth the commercial intercourse of Philadelphia with other American ports has in the main kept up its proportionate activity. The following tables, one set giving the number of vessels arriving at the port of Philadelphia from other American ports in each year, and the other giving the tonnage of vessels owned in Philadelphia and licensed to engage in the coastwise trade, will give some indication of the growth of this traffic. Vessels engaged in the coast trade are not required to enter and clear at the custom house, except in certain cases, and their full number therefore is not reported by the collector nor published by the government. A list of all arrivals, however, has generally been kept by the surveyor of the port, and it is from this list that the table is in the main derived. Until about twenty years ago it was customary to include absolutely all arrivals, from the largest ships down to canal boats. Since then different systems have prevailed. The rule in quite recent years being to report all vessels above five tons which bear masts. For these latter years, however, two other sources of statistics are available, those kept by the Philadelphia Maritime Exchange and those kept by the Board of Port Wardens, and these are also given. The annual tonnage of arrivals, which would be the only accurate criterion of the growth of commerce has not been recorded, except by the board of port wardens, and in default of this record the character of the vessels arriving is given for certain typical years. It is also to be noticed that the record of the surveyor includes vessels arriving at Camden and Chester as well as at Philadelphia, these cities lying in the same customs district, but the number attributable to them is altogether inconsiderable.

The table of enrolled and licensed tonnage in each year indicates the total amount of the tonnage of all the vessels engaged in the coastwise trade which report to Philadelphia as their headquarters. There is of course no necessary relation between the number of vessels enrolled at any port, and the amount of commerce entering and departing from it, but the changes in the two, in the case of coastwise commerce at Philadelphia, have probably gone on almost correspondingly.

NUMBER OF VESSELS ARRIVING AT THE CUSTOMS DISTRICT OF PHILADELPHIA FROM OTHER AMERICAN PORTS IN EACH YEAR (SURVEYOR OF THE PORT).

1785,	567	1821,	913	1857,	32,211
1786.		1822,	1,212	1858,	26,827
1787,	390	1823,	1,008	1859,	36,317
1788,	490	1824,	981	1860,	37,904
1789 (part of year),	376	1825,	1,195	1861,	34,517
1790,	715	1826,	1,195	1862,	35,164
1791,	853	1827,	1,320	1863,	34,096
1792 (half year),	505	1828,	1,247	1864,	30,882
1793,	765	1829,	2,210	1865,	32,606
1794,	1,250	1830,	3,287	1866,	33,038
1795,	1,228	1831,	3,262	1867,	31,640
1796,	1,011	1832,	2,849	1868,	36,265
1797,	929	1833,	2,573	1869,	40,334
1798,	1,002	1834,	2,686	1870,	35,427
1799,	825	1835,	3,573	1871,	37,922
1800,	1,051	1836,	3,764	1872,	35,896
1801,	1,125	1837,	7,776	1873,	9,310
1802,	1,106	1838,	10,860	1874,	9,178
1803,	1,064	1839,	11,188	1875,	8,238
1804,	1,292	1840,	9,718	1876,	5,647
1805,	1,235	1841,	11,738	1877,	4,700
1806,	1,213	1842,	10,457	1878,	5,065
1807,	1,170	1843,	7,659	1879,	5,173
1808,	1,951	1844,	7,717	1880,	6,863
1809,	1,683	1845,	8,029	1881,	5,316
1810,	1,477	1846,	6,018	1882,	4,955
1811,	1,425	1847,	17,083	1883,	4,970
1812,	1,549	1848,	24,029	1884,	5,730
1813,	319	1849,	24,563	1885,	4,422
1814,	583	1850,	26,999	1886,	11,509
1815,	1,113	1851,	26,480	1887,	11,122
1816,	1,101	1852,	27,715	1888,	10,423
1817,	1,238	1853,	29,456	1889,	8,670
1818,	1,101	1854,	29,960	1890,	8,456
1819,	1,046	1855,	28,820	1891,	8,859
1820,	877	1856,	26,442		

NUMBER OF VESSELS ARRIVING AND DEPARTING, ANNUALLY, COASTWISE, AT AND FROM PHILADELPHIA, ACCORDING TO DIFFERENT ACCOUNTS, DURING RECENT YEARS.

YEARS.	Number, according to Surveyor of the Port. Includes whole customs district of Philadelphia, and all vessels above five tons except barges and canal boats.	Number, according to books of Maritime Exchange. Includes only city of Philadelphia, and only steamers and vessels with two or more masts, above 100 tons.	Number, according to Board of Port Wardens. Includes only city of Philadelphia, and only steamers and vessels with two or more masts, above 75 tons.	Tonnage, according to Board of Port Wardens.
1880,	6,819	6,125	5,412	2,005,098
1881,	5,316	5,308	4,969	2,089,079
1882,	4,955	5,691	5,121	2,269,410
1883,	4,970	5,869	4,815	1,958,860
1884,	5,730	5,203	4,780	1,841,242
1885,	4,422	4,728	4,454	1,782,177
1886,	11,509	4,531	3,953	1,556,497
1887,	11,122	4,414	3,687	1,596,611
1888,	10,423	3,987	3,574	1,562,324
1889,	8,670	3,746	3,760	1,640,514
1890,	8,456	3,844	3,803	1,765,599
1891,	8,859	4,248	4,241	2,211,596

YEARS.	Departures according to Maritime Exchange.	Departures according to Board of Port Wardens.	Tonnage of departures according to Board of Port Wardens.
1880,	5,361	4,870	1,961,216
1881,	5,390	4,592	1,980,131
1882,	5,137	4,691	2.184,313
1883,	5,079	4,408	1,908,345
1884,	5,049	4,571	1,841,748
1885,	4,736	4,377	1,846,214
1886,	4,669	4,001	1,902,571
1887,	4,805	3,667	1,813,453
1888,	4,290	3,572	1,670,848
1889,	4,143	4,115	1,929,908
1890,	4,165	4,115	2,034,714
1891,	4,552	4,452	2,445,801

NUMBER OF EACH DESCRIPTION OF VESSELS ARRIVING IN THE CUSTOMS DISTRICT OF PHILADELPHIA IN CERTAIN YEARS—(SURVEYOR OF THE PORT).

YEARS.	Steamers.	Ships.	Barks.	Brigs.	Schooners.	Sloops.	Barges.	Boats.
1790,		144		321	252	637		
1800,		146	3	212	636	490		
1810,		130	1	236	787	666		
1820,		133	3	236	614	370		
1830,		97	4	387	2,026	1,128		
1833,		101	34	291	1,950	371		
1834,		82	20	494	2,035	484		
1848,	464	101	353	965	5,907	3,629	3,265	9,880
1849,	661	115	325	888	6,480	4,486	3,686	8,528
1850,	1,043	106	342	834	7,681	5,200	3,850	8,490
1851,	995	112	344	775	7,047	3,051	5,154	9,583
1852,	1,054	119	400	1,445	6,824	2,690	8,850	10,002
1853,	1,135	96	109	529	6,325	3,709	6,525	11,098
1854,	1,056	182	129	539	6,156	3,332	7.821	9,735
1855,	952	116	126	451	6,002	3,240	7,784	10,159
1857,	1,096	42	86	313	5,416	2,312	13,512	9,462
1858,	1,257	22	70	178	5,875	2,270	7,664	9,491
1869,	4,301	2	3	143	8,919	5,907	9,994	11,065
1870,	3,354	4	22	96	7,936	5,583	7,789	9,623
1871,	3,364	11	36	106	7,169	4,695	1,951	20,590
1872,	3,138	7	31	139	7,826	3,228	1,381	20,146
1875,	2,160	9		58	4,730	1,281		
1880,	2,008	30		40	4,741	44		
1886,	3,295	7	79	24	6,369	1,738		
1887,	3,289	2	69	57	6,320	1,385		
1888,	3,538	17	59	63	5,028	1,718		
1889,	3,095	8	16	12	4,527	1,012		
1890,	2,468	5	55	18	4,989	921		
1891,	2,960	9	31	9	4,811	103		

NUMBER OF EACH DESCRIPTION OF VESSELS OF MORE THAN 100 TONS ARRIVING AT PHILADELPHIA FROM COASTWISE PORTS IN RECENT YEARS—(PHILA. MARITIME EXCHANGE).

YEARS.	Steamers.	Ships.	Barks.	Brigs.	Schooners.
1878,	1,780	. . . .	11	10	4,070
1879,	1,681	2	36	26	4,707
1880,	1,872	7	50	44	4,152
1881,	1,657	5	47	50	3,549
1882,	1,846	11	33	53	3,748
1883,	1,777	7	49	56	3,980
1884,	1,658	14	50	22	3,459
1885,	1,633	25	42	20	3,008
1886,	1,619	19	53	25	2,518
1887,	1,539	19	77	52	2,727
1888,	1,517	18	34	22	2,396
1889,	1,433	11	21	8	2,509
1890,	1,376	8	80	19	2,361
1891,	1,474	16	44	8	2,706

AN ESTIMATE OF ARRIVALS AND DEPARTURES OF VESSELS COASTWISE AND WITH DOMESTIC PORTS, IN THE YEAR 1890—MADE BY THE UNITED STATES ENGINEER'S OFFICE.

VESSELS.	Arrivals.	Departures.
Steamers, excluding tug boats and ferry boats,	9,678	9,785
Sailing vessels,	5,420	4,208
Canal boats and barges,	8,070	11,640
Railroad lighters between Philadelphia and Camden,	9,040	6,718
Rafts,	205	235
Total,	32,413	32,586

Tonnage of Delaware River to and from Wilmington, Delaware, not included in the statement of freight movement given under domestic commerce, 852,954 gross tons.

TONNAGE OF VESSELS ENROLLED AND LICENSED AT THE PORT OF PHILADELPHIA TO TAKE PART IN THE COASTING TRADE.

1789,	4,015	1824,	27,796	1858,	159,928
1790,	5,180	1825,	29,421	1859,	163,030
1791,	3,222	1826,	31,583	1860,	174,642
1792,	3,515	1827,	34,436	1861,	182,759
1793,	4,625	1828,	37,416	1862,	202,615
1794,	6,273	1829,	27,494	1863,	163,949
1795,	7,325	1830,	24,236	1864,	194,502
1796,	7,669	1831,	29,225	1865,	212,014
1797,	8,178	1832,	31,147	1866,	204,499
1798,	8,348	1833,	30,529	1867,	221,874
1799,	7,857	1834,	32,079	1868,	237,146
1800,	8,032	1835,	34,857	1869,	157,037
1801,	7,444	1836,	40,871	1870,	263,865
1802,	8,951	1837,	42,592	1871,	276,358
1803,	9,855	1838,	45,080	1872,	296,729
1804,	9,995	1839,	48,293	1873,	312,468
1805,	11,000	1840,	51,675	1874,	329,053
1806,	10,297	1841,	58,425	1875,	330,528
1807,	11,440	1842,	57,749	1876,	179,932
1808,	14,671	1843,	64,894	1877,	173,823
1809,	14,922	1844,	74,599	1878,	140,057
1810,	15,803	1845,	91,132	1879,	151,878
1811,	17,164	1846,	88,228	1880,	161,087
1812,	17,502	1847,	109,407	1881,	159,352
1813,	20,247	1848,	126,371	1882,	158,628
1814,	20,407	1849,	134,265	1883,	158,067
1815,	22,360	1850,	142,292	1884,	158,343
1816,	24,744	1851,	153,003	1885,	154,439
1817,	24,296	1852,	161,704	1886,	166,878
1818,	25,148	1853,	179,739	1887,	160,384
1819,	23,673	1854,	193,794	1888,	153,937
1820,	24,117	1855,	217,365	1889,	172,413
1821,	25,080	1856,	138,476	1890,	194,975
1822,	23,995	1857,	151,975	1891,	204,407
1823,	27,291				

Some explanation of certain parts of the above tables is necessary. The records for 1789 and for 1792 are incomplete. The small number of vessels arriving during the years 1813 and 1814 is due to the British blockade of the Delaware during the war at that time in progress. The rapid increase beginning with the year 1829 was due to the opening of the Chesapeake and Delaware canal in the spring of that year, and the consequent addition of much of the commerce of the Chesapeake bay and the Susquehanna river to that of the Delaware. The subsequent increase was principally by the growing exportation of coal. The smaller numbers, 1843–1846, are probably accounted for by a temporary cessation of the record of smaller vessels, while the similar change after 1872 is quite evidently attributable also to a change of system of recording entrances. In the table giving classes of vessels, the years down to 1852, include foreign arrivals as well as coastwise. It may be repeated that a smaller number of vessels in later times may really represent a very much greater tonnage than in the time of the old small vessels. The other tables are self-explanatory except that the decrease in the enrolled tonnage about 1875, probably arises from the adoption of a different system of measuring ships to estimate their tonnage

During the Revolution the commerce of Philadelphia, coastwise and foreign alike, had sunk to insignificance. When it revived after the cessation of active hostilities the main directions in which it extended were but little changed from colonial times, as is indicated by the following table. Such changes as showed themselves on the first revival of commerce, as for instance, the much greater proportionate amount of coastwise commerce, tended soon to return to the earlier distribution.

PROPORTION OF THE VESSELS LEAVING PHILADELPHIA FOR VARIOUS DESTINATIONS AT CERTAIN PERIODS.

DESTINATION.	1735. Per cent.	1770. Per cent.	1785. Per cent.	1801. Per cent.
Continent of North America, . . .	25	40	54	25
West Indies and adjacent regions, .	36	26	31	30
British Isles, ...	18	10	$5\frac{1}{2}$	12
Continent of Europe, Madeira, etc.,	15	20	$6\frac{3}{4}$	30

For some years the relative importance of foreign and coastwise commerce remained about the same, after which time the coastwise traffic began to draw ahead, which it has since constantly continued to do.

Much of Philadelphia's importation from other American ports, especially in the early years of the century, was of articles intended to be sent to Europe, and her coastwise exportation, likewise, consisted largely of articles previously brought from abroad. It is true that Pennsylvania, as in colonial days, still sent to New England and the south her wheat, flour and other food products, her bar-iron, ironware, nails, paper, etc., and in later times, her coal and petroleum; bringing back from the other states their own fish, tobacco, and rum, rice, woods, indigo, bituminous coal, tar and turpentine, etc., for use here. But a great deal more of the exportation to domestic ports was made up of the manufactured goods, the salt and the wines of Europe; the sugar, coffee, rum, and molasses of the West Indies, and the teas, spices and other products of China and the East Indies; while we brought in cotton from Georgia, Louisiana and the southern states, tobacco, rice, naval stores and other staples, largely to be sent in turn to Europe. Before railroads existed for such internal distribution or canals had made a cheap and easy route to the interior, the requirements and the products of the great Mississippi valley passed up and down the Mississippi river through New Orleans and made their way to or found their way from European markets through the eastern seaboard cities.

Of this combined foreign and coastwise trade Philadelphia had a large share, as is indicated, among other evidences, by the early establishment of packet lines between Philadelphia and such points.

This last-named system grew up only after the Revolution, when more regular trips began to be made by certain vessels to various places at

stated times. These vessels were at first advertised as "regular traders," but soon became regularly established lines with stated days for departure, one or more vessels running to and from a certain port only. One of the earliest of such lines ran between Philadelphia and Newcastle on the Delaware, for the purpose of taking and receiving freight which had been brought across the the narrow neck of land from the "Head of Elk," on the Chesapeake. This line of trade had come into existence with the great demand abroad for American grain during the latter years of last century, making it profitable to bring wheat, flour, corn and salt meats down the Susquehanna, across to the Delaware and to ship it from Philadelphia to Europe. By the early years of this century passenger traffic also, between Philadelphia and Baltimore, had developed to such an extent that a new line of regular packets was put on in 1805 between Philadelphia and Newcastle, consisting of three packet boats, one of which left every day but Sunday, meeting a stage coach at Newcastle which carried passengers across Delaware state and connected with a line of four packet boats on the Chesapeake. A similar route to New York existed by means of packet boats to Burlington or Trenton, there meeting stages in which to cross New Jersey to the Raritan River, whence boats ran to New York and vicinity. Other packet lines were established to points along the river, subsequently the field was extended further and regular lines were established to New York and Boston, to Charleston, S. C., to New Orleans, La., and ultimately to almost every place of importance on the Atlantic seaboard.

By the end of the first quarter of the century the system had become something like a complete one, packet lines of sailing vessels being in existence to twenty or more points in the American coast, besides points in the Delaware River, and even running to European ports. In 1827 there were ninety-four vessels regularly engaged as packets from Philadelphia to various coastwise ports. The number of vessels, the ports to which they ran, and other particulars are indicated in the following table constructed at that time for the purpose of influencing the United States Government to spend more money in the improvement of navigation in the Delaware river.

At the same period the annual value of transient coastwise vessels and cargoes coming to and going from Phlladelphia, in addition to this packet traffic, was estimated at an additional sum of $20,000,000

TRAFFIC OF REGULAR PACKET LINES TO DOMESTIC PORTS IN THE YEAR 1827—(A CONTEMPORARY ESTIMATE).

PORTS TO WHICH PACKET LINES RAN.	Number of vessels.	Average value of vessels.	Average value of cargoes.	Average number of passages a year.
Baltimore, Md.,	5	$3,000	$6,000	90
Alexandria, Va.,	4	3,000	5,000	70
Richmond, Va.,	5	4,000	7,000	90
Petersburg and Norfolk, Va.,	3	4,000	6,000	40
New Orleans, La.,	5	13,000	80,000	35
New Orleans, La.,	3	13,000	37,000	24
Atacapas,	2	7,500	12,500	12
Mobile, Ala., and Pensacola, Fla.,	2	3,000	10,000	16
Newbern, N. C.,	1	5,000	5,750	18
Wilmington, N. C.,	3	2,500	4,000	54
Charleston, S. C., and Savannah, Ga.,	4	12,000	36,000	90
New York,	15	2,000	12,500	528
Hartford, Conn.,	3	2,500	10,000	48
Nantucket, Mass.,	3	2,000	6,000	48
New Bedford, Conn.,	3	2,000	6,000	32
Providence, R. I.,	6	3,000	21,666	60
Boston, Mass.,	11	6,000	16,000	171
Portsmouth, N. H.,	2	1,500	5,000	40
Portland, Maine,	2	2,000	7,000	15
Salem, Mass.,	1	3,000	10,000	15
Newburyport, Mass.,	4	2,400	3,000	48
Hingham, Mass.,	4	2,400	3,000	48
Stonington, Conn.,	3	1,500	3,000	30
Total,	94			

Total estimated value of vessels on all the trips of a year,	$6,159,400
Total estimated value of cargoes on all the trips of a year,	21,736,500
Total value of vessels and cargoes on packet lines,	27,895,900

Land carriage by railroads militated against the coastwise packet lines and the development of steam vessels gradually superseded them in the traffic that remained.

The coastwise commerce of Pennsylvania, as far as it consisted of traffic with the regions around Baltimore and with places in the vicinity of New York, was manifestly taking a very roundabout route when it had to go by way of the capes of the Delaware. Projects were therefore early set on foot for cutting across the narrow parts of Delaware and of New Jersey by means of canals. These plans were finally realized by the opening of the Delaware and Chesapeake Canal in 1829, and the Delaware and Raritan Canal in 1834. The amount of traffic that passed through these canals was considerable as is indicated by the increase of Philadelphia coastwise traffic shown in the general table, though the development of railroads ultimately changed the conditions of the problem of transportation. In 1830 a line of packets to run regularly

between Philadelphia and Port Deposit, Md., was established, and soon two lines of steamboats and seven of sailing packets ran through the canal to points on the Chesapeake and its rivers. The following record of traffic through the canal for the year ending June 1st, 1831 will give some idea of its importance in these pre-railroad days:

1,230	packet vessels carrying	general merchandise.	
600	vessels carrying	13,332 cords wood.	
272	do.	do.	7,118,734 feet lumber.
294	do.	do.	101,462 barrels flour.
446	do.	do.	289,173 bushels wheat, corn, etc.
2,638	do.	do.	cotton, iron, oysters, fish whisky, etc.
5,480	vessels and boats of every description.		

The organization, in 1841, of a steamboat company to tow canal boats between Philadelphia and Havre de Grace increased the amount of freight passing through the canal very materially. The early business of this company increased as follows:

NUMBER OF BOATS TOWED ANNUALLY BETWEEN PHILADELPHIA AND HAVRE DE GRACE.

1841,	961	1844,	2,474	1847,	4,806
1842,	1,387	1845,	3,593	1851,	6,000
1843,	1,900				

In the last of these years four iron steam towboats were occupied in performing the work. Grain, flour, salt beef and other provisions, iron and certain manufactured articles were brought by way of the Delaware and Chesapeake canal from the Susquehanna and other rivers running into the Chesapeake bay for export from Philadelphia, and a variety of articles sent back, partly the productions of Philadelphia and its vicinity, partly imported. The Delaware and Raritan canal served something of the same purpose, though the main part of the traffic passing through it, as much of that of the Delaware and Chesapeake, was merchandise and othor products passing between New England, New York and the southern states and therefore hardly to be considered as Pennsylvania commerce at all.

A product purely Pennsylvanian, however, soon came to make much use of the Delaware and Raritan canal as of other waterways and railroads. This was anthracite coal. Coal, in fact eventually became the principal item in the coastwise commerce of the Delaware. The export of anthracite from Pennsylvania began in 1822 with a cargo of seventy-three tons sent out by the Lehigh Coal and Navigation Company, The next year that company sent out 723 tons and in 1824 shipped 3,255 tons. In 1325 the Schuylkill Coal Company and others brought 5,000 tons down from that field and sent it away, principally to New York. From that time onward coal was shipped constantly by these companies and many others. The coal was loaded in vessels principally at two points, first, Bristol, on the Delaware, fifteen miles above Philadelphia, at the terminus of the Delaware branch of the state canal system. This

was opened in 1831 and by means of it the coal was brought down in canal boats from the Lehigh region, to be loaded in vessels for shipment to other, principally northern, ports. The shipments from Bristol for some years were very active, some 200,000 tons having been shipped in about 1,500 vessels in the year 1846. But the establishment of coal wharves below at Port Richmond, the opening of an outlet from the state canal into the river above, leading to canal boat shipments direct to the vicinity of New York, the acquisition of canal and railroad routes across New Jersey by some of the principal coal shipping companies and perhaps other causes, brought the line of shipments from Bristol eventually entirely to an end and now scarcely a vessel, except, river, pleasure, and freight steamers, passes beyond the upper boundary of Philadelphia. Just below this boundary, however, was the point chosen by the Reading Railroad Company to place its coal wharves when the point of shipment was changed from its old location at the terminus of the Schuylkill canal. Port Richmond on the Delaware has ever since remained the greatest point of water shipment of coal in the world. The distribution of coal sent by water from this point is to almost every American state and to several colonies, the West Indies and other places. The 2,000,000 and more tons sent away in 1871 was destined to some twenty-six states and colonies located as follows:

Total, 2,343,026. Of which

New England,	1,406,502	South of Philadelphia,	148,912
New York and New Jersey,	575,447	Foreign ports,	20,269
Pennsylvania,	191,896		

As to the amount of coal shipped from the Delaware river, the statistics are available for some twenty-five years, for all shipments, and for later years those from Port Richmond only.

YEARS.	Number of tons sent by water.	Number of vessels.
1822,	73	4
1823,	723	11
1824,	3,255	40
1825,	18,520	150
1826,	28,413	271
1827,	39,327	397
1828,	45,915	469
1829,	47,100	489
1830,	63,137	644
1831,	55,640	563
1832,	158,442	1,592
1833,	198,168	2,010
1834,	156,154	1,575
1835,	267,139	2,361
1836,	344,812	3,225

From Richmond the terminus of the Philadelphia and Reading Company, the shipments since 1846 have been as follows, though a small amount has sometimes been delivered at other wharves in the city limits and is therefore hardly to be considered as coastwise export:

Years.	Tons.	Years.	Tons.	Years.	Tons.
1846,	892,364	1862,	1,325,400	1878,	2,136,215
1847,	1,247,040	1863,	2,128,154	1879,	2,618,309
1848.		1864,	2,158,423	1880,	1,631,603
1849.		1865,	2,051,202	1881,	1,920,913
1850,	1,075,344	1866,	2,402,897	1882,	2,017,897
1851,	1,211,605	1867,	2,121,199	1883,	2,127,965
1852,	1,236,649	1868,	2,113,581	1884,	1,886,421
1853,	1,505,984	1869,	2,362,972	1885.	
1854.		1870,	1,951,467	1886.	
1855,	1,576,596	1871,	2,343,025	1887.	
1856,	1,421,213	1872,	2,238,850	1888.	
1857,	1,076,187	1873,	2,226,865	1889.	
1858,	1,029,003	1874,	2,051,117	1890.	
1859,	1,004,540	1875,	1,703,459	1891.	
1860,	1,186,477	1876,	1,832,627		
1961,	909,112	1877,	5,784,657		

For many years the coal was shipped in whatever vessels presented themselves for a cargo. These were principally brigs, schooners and sloops ranging from 60 to 250 tons burden, but all rigs were represented; at certain times of year they were in great demand and all vessels arriving, not otherwise engaged, were immediately chartered for the carriage of coal. Much often remained on the wharves for want of carrying facilities and the active trade of these times shows itself in the list of coastwise arrivals given above. The number and variety of vessels made use of will appear from the following table, for the two years, 1846 and 1847:

VESSELS.	1846. Number.	1847. Number.
Ships,	1	2
Barks,	23	37
Brigs,	341	798
Schooners,	3,092	5,614
Sloops,	935	1,066
Steamboats,	14	78
Barges,	928	177
Boats,	1,150	5,700
Total,	7,485	13,472
Carrying coal, (tons),	892,464	1,247,040

In 1869, however, the Reading Railroad Company determined to enter themselves upon the business of transporting coal from Richmond to its ports of sale and immediately set about the creation of a fleet of iron

steamboats. Fourteen of these were soon built at a cost of something over two and one-half million dollars and put into service as follows:

DATE.	NAME.	Tonnage.
1869,	Rattlesnake,	417
1869,	Centipede,	436
1870,	Achilles,	763
1870,	Hercules,	764
1870,	Leopard,	609
1870,	Panther	699
1873,	Reading	1,283
1874,	Harrisburg,	1,283
1874,	Lancaster,	1,283
1874,	Perkiomen,	1,035
1874,	Berks,	553
1874,	Williamsport,	1,283
1874,	Allentown,	1,283
1874,	Pottsville,	1,283

These vessels carry from 500 to 1,650 tons of coal at a trip and make from 30 to 35 trips a year, They deliver therefore from 450,000 to 500,000 tons of coal yearly to points along the Atlantic coast. They run mainly to Boston and points between, though frequently as far as Portland, Maine. The traffic would employ constantly from 150 to 250 schooners of medium size.

But notwithstanding the continued activity in the shipment of coal from Philadelphia and its vicinity (and this includes, in addition to the Richmond traffic, a large amount of bituminous and anthracite shipped by the Pennsylvania railroad on the Schuykill, and of anthracite by the Lehigh companies at Camden), yet the relative importance of the Delaware as a coal shipping stream, has decidedly sunk. In 1840 practically all the coal mined in Pennsylvania was sent to the banks of the lower Delaware either for consumption or shipment. By 1870 there were the following additional outlets:

To New York, eight railroads and canals;

To Baltimore, four railroads and canals;

To the Great Lakes and northwest, five railroads.

In the same year the direction of consignments to tide water was as follows:

To Philadelphia and vicinity, 3,056,198 tons;

To New York and vicinity, 6,431,626 tons;

To Baltimore and vicinity, 305,494 tons.

And this condition of affairs has not materially changed since.

The following table is a record of receipts and shipments of articles from and to other ports in the United States, collected by the United States engineer in charge of improvements in the Delaware, from the reports of the individual shippers and consignees for the year 1890:

RECEIPTS FROM AND SHIPMENTS TO COASTWISE PORTS IN THE YEAR 1890.

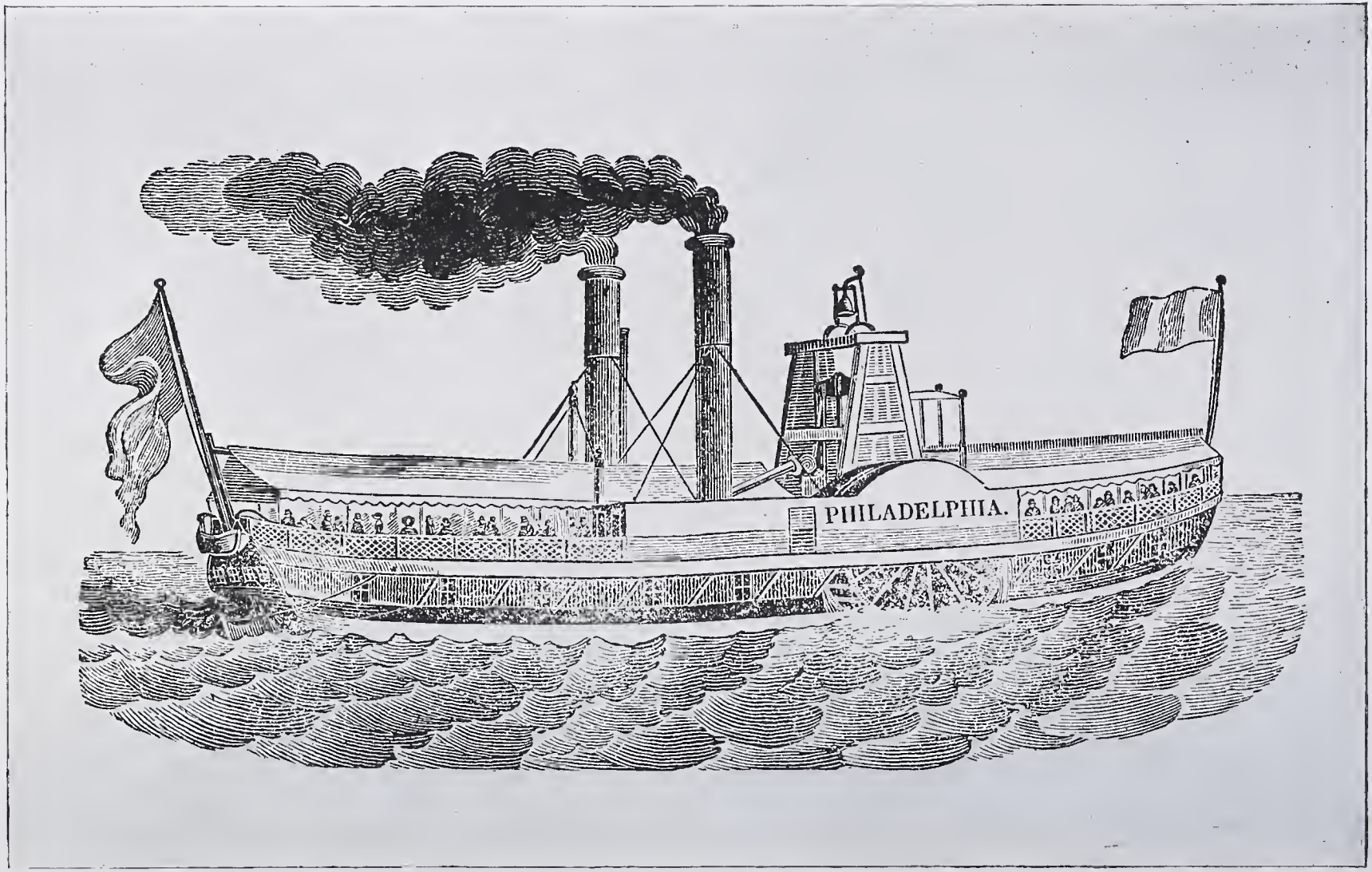
RECEIPTS.	Tons.	SHIPMENTS.	Tons.
Ice,	603,635	Coal,	3,044,130
Chemicals,	11,003	Iron, manufactured,	141,230
Oysters and fish,	103,561	Cotton,	170
Iron, manufactured,	79,055	Lumber,	31,696
Coal,	166,846	Manure,	60,217
Cotton,	15,050	Petroleum,	27,020
Lumber,	216,234	Fertilizers,	18,009
Railroad ties,	87,848	Unclassified,	1,263,927
Wood,	12,633		
Stone, building,	49,085	Total,	4,686,399
Stone, paving, block,	40,064	Passengers departing,	979,476
Sand,	178,582		
Fertilizers,	42,952		
Sugar,	2,070		
Unclassified,	2,138,258		
Total	3,746,877		
Passengers arriving,	949,079		

STEAM NAVIGATION.

Philadelphia was the birthplace of steam navigation, as far at least as America is concerned. The story of Fitch, his struggles, his temporary success, and his failure which might so easily have been a permanent success, are now familiar to all. It was in a little stream running into the Delaware that John Fitch, in 1785, placed his first model. By the next summer he had developed his plans, applied for patents, obtaining one from the Legislature of New Jersey, formed a company of Philadelphia men who had among them subscribed $300, and built and launched a steamboat on the Delaware, which made some progress notwithstanding the liberal leakage of its boiler, and other defects. A second steamboat was now constructed forty-five feet long, and in the summer of 1787 this boat ran successfully in a trial trip up and down in front of the city. Among the spectators were a number of delegates to the Federal Convention at that time in session at Philadelphia. On July 12th, 1788, a new vessel with improved engines and paddles ran as its trial trip to Burlington, N. J., in front of which, unfortunately, the boiler burst. After many difficulties and discouragements another and a successful test was at last made in December, 1789. In the spring of 1790, this boat began running regularly on trips every other day between Philadelphia, Burlington, Bristol, Bordentown and Trenton. On Sundays a pleasure trip was made down to Chester and back. This steamboat service continued through the summer of 1790 and into September, when it ceased. During the same months Fitch's company was also at work building a second steamboat destined to run on the waters of the state of Virginia, but as it was reaching completion, a storm arose, drove it from its moorings and it was wrecked in the mud of Petty's Island opposite. The finances and the faith of the company would not endure any further strain and steamboat navigation on the Delaware for a time came to an end.

Its failure at this first period probably arose not from individual difficulties but from industrial conditions. There were in Philadelphia, so many other ways for the investment of capital in which returns were more certain and more immediate and the whole economic order of the new nation was so incompletely developed, that it was only at a time later by fifteen years and in a city where opportunities for investment were not so varied and perhaps economic life more active and the spirit of speculation stronger, that the inertia of custom was at last broken and steamboat navigation put on an actual practical basis.

But at Philadelphia, for almost twenty years after the "Perseverance" was wrecked, there were no boats in the Delaware propelled by steam.



A STEAMBOAT USED ON THE DELAWARE RIVER AND CANAL TO BALTIMORE IN 1846.

In 1809, however, the period of steam navigation here began its continuous existence. The great opportunity which attracted the early projectors of steamboat lines, was their use as substitutes for the sailing vessels on the river packet lines, especially those which took passengers over one section of the journey to New York or to Baltimore. Their use as ferry boats to Camden and for pleasure trips was, it is true, almost simultaneous, but their more ambitious forms of service as tug boats on the rivers and canals, as packet boats for freight and passengers to distant coastwise ports and ultimately to Europe and other foreign countries, were only thought of long afterwards and introduced step by step. The pioneer boat in this development was the "Phœnix," built by Stevens in New York, but prevented from running there by the monopoly given to Fulton & Livingston in 1787. On account of this obstacle to its use as originally intended, it was brought safely around the New Jersey coast, the first ocean steam voyage, up the river to Philadelphia and took its place along with the sailing packet boats between Philadelphia and Trenton on the route to New York. It carried some forty passengers for whom berths were provided in the cabin and steerage. Pleasure trips were also made on moonlight nights and on Sundays, with meals and music served on board in quite modern style. In July, 1810, the "Phœnix" began running regularly on Mondays, Wednesdays, Thursdays and Fridays to Bordentown, a trip which was made in about four hours. Here stages were ready to take passengers across New Jersey to the Raritan at New Brunswick, a distance of twenty-six miles, where another steamboat was met, as already described. In the same year, 1810, a steam ferry boat, the "Camden," was built in Philadelphia, and began to run regularly to Camden for the transportation of passengers only, cattle and wagons being still carried over in the old boats. Proposals were also published to establish a line of steamboats on the Baltimore route to run between Philadelphia and Wilmington, passengers being conveyed across the intervening sixteen miles to the waters of the Chesapeake, there to take another steamer to Baltimore, as was done in the old sailing packets. This proposal took shape and the first steamboat for the service, the "Delaware," was launched at Grice's shipyard in Kensington, in September, 1812.

In 1813 two more steamboats were put on a new route to New York by way of Burlington and Bordentown, forming a daily line, another steam ferry boat to Camden was added and two steamboats was placed in the river for general traffic. In 1815 another steam ferry line was established. Scarcely a year now passed in which some new steamboat was not launched for river traffic of some kind, several were also brought from New York and some sent from Philadelphia to Baltimore. By 1818 there were two regular lines to that city, each having two steamboats on the Delaware and two on the Chesapeake. By 1824

there were five steamboat lines on the corresponding route to New York. In the middle of the century there were between twenty-five and thirty steamboat lines running on the Delaware. At present there are about twenty river traffic lines with some thirty boats, aside from tugs, ferry boats and steamboats going outside of the river.

One of the next uses to which steamboats were put after gaining recognition as river packet boats was as tug boats. One of the old difficulties of the harbor of Philadelphia was its liability to become impassable from ice, either newly formed or collecting in broken masses from above in the bends and narrow channels. Frequently for some days or weeks, sometimes for a month or more, the river and bay would be frozen over fast or so filled with floating ice that sailing vessels could not make their way through. It was early suggested that steam towboats, built especially for the purpose of making their way through and breaking up the ice would be of inestimable advantage to winter navigation. In 1833 the Philadelphia board of trade set itself vigorously to work to create an interest in such boats and on the first of September, 1835, the Steam Tow Boat Company, which had been formed for this purpose, saw its first boat, the "Pennsylvania," launched from Kensington. It was of 300 tons burden, with two engines, each of 100 horse power. Its engines were unfortunately so much delayed that it was of no use for the first winter, but the next year a second, the "Delaware," was built and with the "Pennsylvania," put into service. In the winters of 1836 and 1837 a large number of vessels were towed up from the Capes by these boats. In the next year an ice boat built by the city for similar purposes was placed on the river and was said to have more than repaid her cost in opening up exit and entrance for a large number of valuable merchant vessels in January, 1839. In the winters of 1846 and 1847 the city ice boat towed between the city and the capes, twelve ships, twenty-one barks, sixty-six brigs, thirty-one schooners and thirty sloops, altogether 137 vessels, with an aggregate tonnage of 26,460. In 1856 it was refitted and provided with two new engines of 500 horse power each. It was then 198 feet long and twenty-five feet wide with extensions which enabled it, when in use, to break a pathway through the ice fifty-two feet in width. It was now much the largest and most powerful ice boat in the United States. Subsequently two other ice boats were added and all three have since been maintained by the city by an annual appropriation, though the increasing mildness of the winters has to a great extent obviated the necessity of their use. During the same period steam tugs for all purposes became common and there are at present about 150 in constant use on the Delaware. The formation in 1841 of the Steam Tow Boat Company for towing freight boats through the Delaware and Chesapeake canal and in the two rivers, has already been mentioned under the subject of coastwise commerce.

River steam packets soon suggested coastwise steam packets, and as early as 1818 a meeting was called and the "Savannah Steamship Company" formed for the purpose of building and running a steamship between Philadelphia and Savannah. The project, however, never came to completion. In 1835 there was again a good bit of discussion about establishing a line of steamboats to run to Charleston, Key West and New Orleans. But this also failed for want of sufficient subscriptions, and it was not until 1850 that a southern line of steamboats was at least actually running. In 1851 a second line to Richmond was established, and in 1852 one to Boston. Subsequently others were added, and steam vessels became at first a regular addition to, and finally a substitute for, the old lines of coastwise sailing packets. There are now seven steam lines running between Philadelphia and other coastwise ports.

During the same years steam connection with Europe was finally made. In 1838, when the first line between England and New York began running, the board of trade of Philadelphia took up the matter of ocean steam navigation with interest and appreciation. Public meetings were held, and an agent was sent to England to visit the principal steamship builders and owners. A committee reported in favor of building a steamship of 2,500 tons, and subscriptions to the $500,000 capital needed were invited. The capital, however, was not forthcoming, and the project fell through.

In 1850, under English control, the Liverpool and Philadelphia Steamship Line was established. Two vessels, the "City of Manchester" and "City of Glasgow," were put on and began to run regularly. They continued to run during 1851, 1852, 1853 and 1854, making about forty-four entry trips, while a third vessel, the "City of Philadelphia," was added in the last of these years, and subsequently the "City of Washington," "City of Baltimore" and "Kangaroo." At the same time, however, the breaking out of the Crimean war demanded such a number of transport vessels that in 1855 the two principal steamers of the line were leased by the company to the British government, and the regularity of sailing to Philadelphia thereby broken up. The vessels of the line still made trips in 1855, 1856 and 1857, but they were neither prompt nor regular; the merchants of Philadelphia were dissatisfied, and the owners of the line did not find it remunerative. It was therefore discontinued. During its continuance it had led to an increase in the direct exports and imports of Philadelphia, as will be seen in the annual values for those years. The cargoes had averaged about $250,000 in value, and the loss of direct connection with Europe was much deplored.

Meantime, in the year 1851 the Pennsylvania Steamship Company was incorporated and obtained some one hundred and five shareholders, subscribing sums from $1,000 to $10,000 each. They built the steamer "City of Pittsburgh," to run between Philadelphia and Liverpool, but

as it did not pay the managers determined to send it to California. On the journey thither she was burnt in the Bay of Valparaiso, October 24, 1852. In 1859 the company was dissolved by the courts. In 1854 a project for a steamship line to Bordeaux, France, was discussed but nothing came of it. In 1857 the Legislature of Pennsylvania chartered the Philadelphia and Crescent Navigation Company, which proposed to establish a line of weekly steamers between Philadelphia and Europe. This company maintained a dragging existence for some years, latterly making overtures to the Pennsylvania railroad to take it under its control, but accomplished nothing. The Philadelphia Ocean Steamship Company had a charter in 1859 but never had anything else.

Finally, after all this failure, in the summer of 1870, the old agitation was again taken up, led by the board of trade, in connection with the Pennsylvania Railroad Company. This time satisfactory arrangements were made, all stock and bonds subscribed for, a charter obtained from the legislature, and by the middle of 1871 a contract had been entered into between the American Steamship Company and the Philadelphia firm of William Cramp & Sons, to build four first-class iron propeller ships. These were all finished and accepted by the beginning of 1874, the "Pennsylvania" having made her trial trip in May, 1873, the "Ohio" in July, the "Indiana" in October, and the Illinois in January, 1874. They measured about 3,125 tons apiece, and cost altogether about $2,200,000. They were immediately placed in the service between Philadelphia and Liverpool, in which they have since remained, though unfortunately, it is said, at a continuous loss to their owners. There were subsequently added to the line four steamers of British build, whose arrivals at Philadelphia for the first time respectively were as follows: Lord Clive, November, 1875; Lord Gough, May, 1879; British Prince, April, 1882; British Princess; May, 1883. The vessels sail from Philadelphia weekly with passengers and freight.

In 1873 the Red Star Line began a regular service between Philadelphia and Antwerp. The first vessels run were the following: Vaterland, Abbotsford, Nederland, Kenilworth. In 1877, the Switzerland was placed in the service, in 1879 the Zeeland, and still later the Rhynland and Belgenland. The last four make up the present service.

In April, 1884, the Allan Line began running two steamers between Philadelphia and Glasgow in a tri-weekly service. In 1885 an additional vessel was placed on the line making a fortnightly service, which still continues, though carrying freight only.

The Atlantic Transport Line began to run freight steamers to London in 1885, and have had some half a dozen steamers in the service since.

In December, 1889, the North Atlantic Trident Company established a freight service between Philadelphia and London, making use of chartered steamers. In December, 1890, the company became owner of

six new steamships, the Holskar, Enskar, Aidar, Fonar, Bidar and Delmar. The first being of 5,600 tons burden, the largest steamer trading regularly to Philadelphia. The vessels sail every ten days, acting in connection with the Philadelphia and Reading railroad and its connections with the interior of the country and the lakes. It has secured especially favorable terminal facilities in conjunction with this railroad at Port Richmond. Its rate of freight to London is exactly the same from Philadelphia as it is on lines from New York, and the average time to London is fourteen days. The same company have just started a second service between Philadelphia and the ports on the Bristol Channel, England, especially Avonmouth and Swansea, at the latter of which all their vessels will stop on the way to America to load tin plate. This branch will include three steamers which will be run semi-monthly.

A line of foreign steamers are also run to Hamburg in connection with the Spreckels' Sugar Refining Company, and still another line sends steamers to Rotterdam and Amsterdam. Still another company has recently been chartered under the name of the Philadelphia Shipping Company, and has begun running vessels from Philadelphia to London, Rotherdam, Amsterdam and Bristol, and proposes the establishment of lines to other ports.

A line of steamers to run between Philadelphia and Mexican ports has just been organized, based on valuable concessions from the Mexican government. Its capital has all been subscribed, its organization perfected, and two vessels have been put in service.

The large number of lines of foreign steamers which have come into existence in the last decade is a striking feature of the existing commercial situation at Philadelphia.

Something of the growth of steam navigation in the past can be seen from the table of coastwise commerce in which the number of vessels of each kind is given. This indicates a gradual growth in coastwise steam vessels from about one in ten of all arrivals in the middle of the century to one in three at the present time. The following table of arrivals and departures from and to foreign ports shows that in the last decade the proportion of steam vessels to sailing vessels has changed from about one steam vesssel to six sailing vessels in 1890 to about an equal number of each in 1891:

YEARS.	ENTRANCES.		CLEARANCES	
	Steam.	Sailing.	Steam.	Sailing.
1880,	200	1,177	131	837
1881,	165	1,063	115	662
1882,	159	824	90	508
1883,	186	642	115	497
1884,	214	637	158	487
1885,	317	902	217	679
1886,	431	713	232	543
1887,	476	646	204	521
1888,	439	601	289	485
1889,	598	708	427	547
1890,	832	628	660	483
1891,	758	636	564	580

A further table is subjoined, giving the total tonnage of all the steam vessels owned and entered at the custom house at Philadelphia in each year since 1829:

TONNAGE OF STEAM VESSELS REGISTERED AND LICENSED AT PHILADELPHIA.

YEARS.	Tonnage.	YEARS.	Tonnage.
1829,	3,596	1861,	29,262
1830,	2,710	1862,	45,049
1831,	2,555	1863,	57,072
1832,	2,405	1864,	31,960
1833,	2,660	1865,	38,826
1834,	2,874	1866,	38,953
1835,	4,110	1867,	33,250
1836,	4,727	1868,	39,682
1837,	5,356	1869,	51,112
1838,	4,825	1870,	50,489
1839,	4,899	1871,	51,132
1840,	5,377	1872,	59,270
1841,	4,578	1873,	72,206
1842,	5,263	1874,	78,937
1843,	7,809	1875,	83,501
1844,	9,355	1876,	80,619
1845,	10,024	1877,	76,531
1846,	11,444	1878,	74,677
1847,	13,019	1879,	72,201
1848,	13,631	1880,	70,336
1849,	15,475	1881,	75,268
1850,	19,665	1882,	79,024
1851,	24,888	1883,	74,116
1852,	25,545	1884,	77,413
1853,	25,629	1885,	74,837
1854,	28,732	1886,	77,070
1855,	19,052	1887,	74,208
1856,	23,559	1888,	73,195
1857,	21,892	1889,	85,154
1858,	22,238	1890,	103,594
1859,	25,388		
1860,	25,472		

The present outlook for the commerce of Philadelphia is more favorable than it has been in preceding times. The steady increase in the value of imports and exports during the last few years is noticeable in the tables. The increase in the tonnage of vessels entering and departing is not so evident for any considerable period, though there is a perceptible increase. In the immediately preceding year the increase is very marked. Some comparisons between the first three months of 1892, and the corresponding period of 1891, give the following results:

	COASTWISE ARRIVALS.	FOREIGN ARRIVALS.	TOTAL ARRIVALS.
1891, ...	712 vessels, 416,098 tons.	274 vessels, 296,729 tons.	986 vessels, 712,827 tons.
1892, ...	654 vessels, 395,640 tons,	441 vessels, 475,868 tons.	1,095 vessels, 871,508 tons.

	COASTWISE DEPARTURES.	FOREIGN DEPARTURES.	TOTAL DEPARTURES.
1891, ...	747 vessels, 457,456 tons.	261 vessels, 244,794 tons.	1,008 vessels, 702,255 tons.
1892, ...	662 vessels, 401,415 tons.	410 vessels, 443,096 tons.	1,072 vessels, 844,511 tons.

	Value of Exports.	*Value of Imports.*
1891, ...	$7,996,888	$13,461,452
1892, ...	15,893,671	16,435,219
	Export of Flour.	*Export of Grain.*
1891, ...	238,052 barrels.	719,384 bushels.
1892, ...	513,896 barrels.	11,861,852 bushels.

This is a year of unusual demand in Europe and unusual abundance in the United States, and to that extent it is not normal, but there have been times when even such conditions would have found but little response in the foreign trade of Philadelphia.

A more permanent indication of increased activity in foreign trade is to be found in the rapid increase of regular lines of steamers running between Philadelphia and foreign ports. Some statements about these have been already given, and it is noticeable that within the last three years four new lines have been started, and within one year lines previously running have added additional services to new ports in three other cases. It is to be presumed that these costly investments are not made without investigation, therefore as one group of vessels after another is placed in service, each gives a new evidence that competent and interested judges at least believe Philadelphia commerce is destined to increase. A third indication is to be found in the improved terminal facilities acquired on the river front recently by the great transportation companies, with the object of having increased business in shipments by water.

Still a fourth reason why commerce may be expected to increase, is that some of the old imperfections of Philadelphia as a port are losing their importance. The lack of canal facilities in the access to the in-

terior of the continent, to the great lakes and the greater west is no longer a disadvantage when freight is almost all taken by railroad, not by canal. The distance up the river from the sea is not of much disadvantage now, since to a modern steamer it means only an additional half day's steaming, and the old difficulty about the ice seems to have disappeared in recent years. Fifthly, the improvements in helps to the navigation of the river have been undertaken in a more active spirit than ever before in the case of the removal of the islands opposite the city now in progress. An improved breakwater, a full number of range lights and other beacons, the channel widened and deepened in the few bad places, an open river in front of the city, and extended wharf lines, will soon make our harbor one of comparative excellence, and leave very little in the way of natural obstacles to increased commerce. A sixth point to be noted is the increased activity of the commercial organizations of the city, especially in the one most closely connected with commerce, the Philadelphia Maritime Exchange. Therefore if it is true that a combination of causes brought about the decadence of Philadelphia commerce, it is possible to find at the present time a combination of indications of its revival and extension in the immediate future.

U. S. NAVAL STEAMER, NEWARK. SIDE VIEW.

SHIP-BUILDING.

At the close of the revolution Philadelphia was not only without commerce, but without vessels. The destruction of the war period, the long time in which trading vessels could be put to no use, and the diversion of activity into other lines had driven Philadelphia colonial ships and ship-building almost entirely out of existence. Of all the vessels which entered and left the port in the four years immediately following the Revolution but thirteen had belonged to Philadelphia before the war, and not one had been built between 1778 and 1781. On the other hand an active export and import trade was demanding shipping, the vigor and activity called out by the national uprising was ready to take advantage of these opportunities, timber was abundant and all the old skill of the colonial ship-builders was still here. Under such circumstances, it is not to be wondered at that Pennsylvania entered upon a wonderful period of ship-building. A partial list of the vessels built in Philadelphia in the years from 1781 to 1787 has been made up from a list of vessels leaving the harbor with cargoes during those years, and shows the following figures. The diminution in the later years is probably largely due to some of the vessels built in 1785, 1786 and 1787 not having yet been entered at the custom house when this set of books comes to an end.

YEAR.	Number.	Tonnage.	YEAR.	Number.	Tonnage.
1781, ...	7	1,120	1785, ...	20	2,412
1782, ...	22	2,146	1786	13	905
1783, ...	40	4,477	1787	16	1,644
1784, ...	44	5,303			

A typical year's work may be seen from the following table of the vessels built in the year 1783:

SHIPS AND BARKS.	Tons.	BRIGS.	Tons.	SCHOONERS.	Tons.	SLOOPS.	Tons.
Enterprise, ...	243	Jane, ...	40	Abigail, ...	18	Polly, ...	20
Brothers, ...	80	Charleston Packet,	48	Mayflower, . .	25	Black Duck, .	10
Philadelphia, ...	130	Richmond, ...	60	Happy Return,	24	Lucy, ...	35
Thomson, ...	300	Mary Catherine, .	60	Elizabeth, . .	24	Clyde, ...	20
Friendship, ...	210	Xenia, ...	60			N. Y. Packet,	20
Pigou, ...	300	Lucretia, ...	40			Little Andrew,	25
Aurora, ...	150	Adventure, ...	120			Friendship, . .	20
Pallas, ...	200	Catherine, ...	100			Despatch, . .	50
Alliance, ...	700	Fame, ...	130				
William and George,	165	New Judith, ...	40				
Charles, ...	150	General Orde, . .	60				
Francisca, ...	165	Betsy, ...	165				
Frederick, ...	150	Constance, ...	100				
		Jesus Maria, . . .	100				
		Vulcan, ...	120				
	2,943		1,243		91		200

Grand total, 4,477.

No statistics have been found again until 1793, when ship-building was still more active, as there were built between the first of March and the end of June in that year twenty-six vessels measuring 4,618 tons, while there were said to be in June about as many more on the stocks to be launched before the end of the year. In the eighteen months from January, 1793, to June 30, 1794, the tonnage built amounted to 10,204 tons. In 1795 there were thirty-one vessels built, and in 1796, twenty-two. Statistics again fail us, but as Philadelphia was just then entering into the most active period of her commerce, and this commerce was carried on almost altogether in home-built vessels, building must have been progressively more active.

On the first of March, 1800, there were on the stocks at Philadelphia, six ships, nine schooners and twenty six gunboats.

In February, 1811, there were about 9,145 tons of shipping in process of building.

A list of the vessels built in part of the year 1793, is subjoined, to indicate the increased average of size due to the changes in foreign commerce.

Vessels Launched at Philadelphia from March 1, to June 29, 1793.

SHIPS.	Tons.	BRIGS.	Tons.	SCHOONERS.	Tons.	SLOOPS.	Tons.
Indian Chief, . .	401	Planter, ...	226	Millie, ...	62	Cornelius, ...	58
India, ...	401	Flora, ...	116	Betsey, ...	156	Walnford, . . .	26
America, ...	220	Twins, ...	195	Flora, ...	126	Urania, ...	79
Good Friend, . .	246	Sea Nymph, . .	189			Fair American, . .	94
Sagely, ...	322	Sally, ...	138			Lively, ...	13
Kensington, . . .	275	Mary, ...	183				
Concord, ...	303	Amiable Creole,	190				
Jean, ...	294	Maria, ...	118				
Pacific, ...	. . . .	Ariel, ...	187				
	2,462		1,542		344		270

It is true that these vessels were but small. The largest were seldom over four hundred tons and a great proportion were below two hundred tons each. Yet they were quite equal to any other vessels of their time. Indeed Philadelphia ship-building during this period between the Revolution and the war of 1812 is acknowledged to have excelled any other south of the New England coast and larger vessels were built in Philadelphia than even in New England. The oak and other woods along the Delaware were admirable in quality and abundant in quantity and the live-oak of the south, much used in all ship-building at that time, was readily brought here in connection with the constant coastwise traffic between Philadelphia and that section of the country. The ship-yards stretched along the river front at Kensington and Southwark, as many as twelve or fifteen being in operation at one time, and all busy, the master ship builders' society flourished, and not only were vessels built here for both foreign and domestic orders, but foreign governments came to the Delaware to seek for builders for their own navies. Samuel

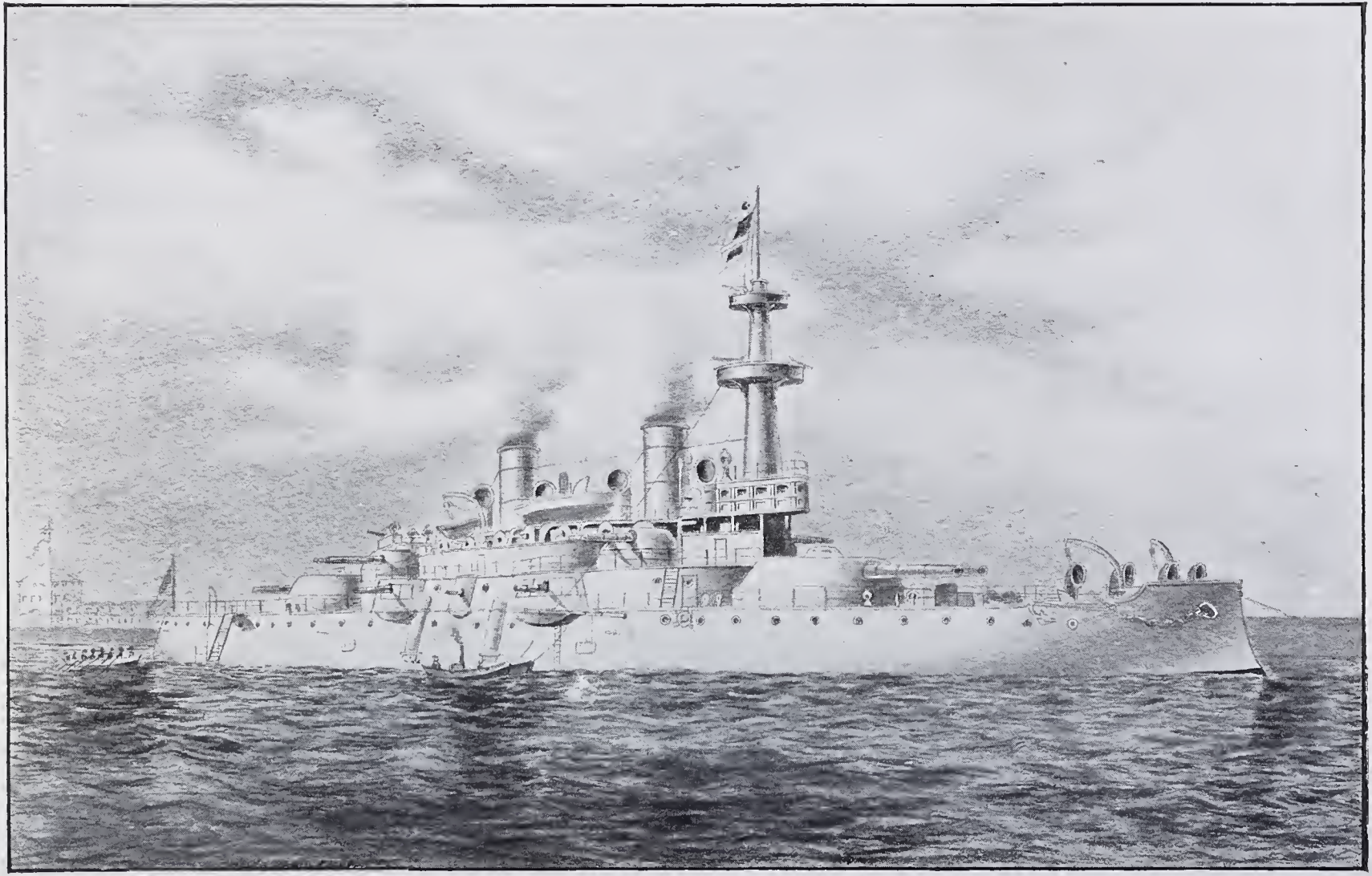
U. S. PROTECTED CRUISER, BOSTON.

Bower, a Kensington ship-builder, was solicited in 1800 by the Spanish government to become its chief naval constructor, and Samuel Humphreys was similarly invited by the Russian government under the most flattering and advantageous terms.

There were few great innovations, so early as this, either in model or rigging, but such as were made were due either to careful study of the conditions of the trade for which the vessels were to be used, or to hints obtained from French and other vessels which entered our ports. Soon however the changes of build began which reached their culmination in the American packets and clipper ships of many years afterward. European ship-builders showed a strange conservatism and unchangeableness in the building of their vessels, while American builders were constantly experimenting, adapting their hulls to various kinds of trade, and thus developing new models. But few vessels were built here at the risk of the builder or on speculation, capital being generally too small and work to fill orders being usually sufficient to occupy the yards. When a master ship-builder received an order for a vessel, her size was agreed upon and the kind of work she was expected to do explained. The builder then usually designed her hull himself, and put not only his technical skill but his inventiveness and æsthetic ideas into the work. Frequently he likewise laid down her whole model in the mold loft, leaving little but the purely mechanical operations to the journeymen ship-carpenters. Such work in a vigorous and quick-witted community could hardly help but lead to some advance, and in this early advance Philadelphia took a prominent place. We find her vessels described as "a fast sailer," "a model of naval architecture," "a very pretty model," and so forth. The Philadelphia-built ship Rebecca Sims, on one occasion, as early as 1807, left the Capes of the Delaware with all sails set and reached the Liverpool docks in fourteen days without having once lowered a sail. This ship, with her companion, "Woodrop Sims," were conspicuous vessels of their time. The latter, built in 1801, registered over 500 tons, was pierced for eighteen guns for her protection from pirates and privateers, cost some $15,000, and was the largest ship then in the American merchant-marine. When their owner failed in 1823 they were sold to a New England house for the whale fishery. The Rebecca Sims was long afterward bought by the government, with others filled with stones and sunk off Charleston Harbor in 1862. The cost of building vessels at Philadelphia at this time varied from $20 to $36 per registered ton. Vessels were built for all sorts of trades. The largest ships were generally for the China and East India trade, others for the trade with Europe or the West Indies, and small vessels for coastwise service. Some also were built for the merchant and war marine of foreign countries, and several for the United States navy. Three or more causes combined to keep merchant vessels small in size. In the first place capital was too scarce to lock up large amounts of it in a single vessel, then

again it was not always possible to obtain enough cargo for a large vessel in the short period in which it was desirable she should remain at port. Still a third cause was the opinion which continued to be long held that if a vessel was so long as to reach from the crest of one wave to that of another, there was danger that she would break or suffer severe strain. It was not until the disproof of this last fear and the disappearance of the two other conditions that vessels here and elsewhere were built larger.

As a type of the earlier wooden ship-building establishments in Philadelphia may be taken that of Samuel Bowers, a respectable and successful builder, though not one of the largest, during the early years of this century. Born in Southwark, a ship-building suburb, in 1760, during the Revolution helping to build boats on the Susquehanna for the transport of the American army, in business with a ship-builder at Baltimore, and then with a ship-building firm in Philadelphia; in 1789 he bought a wharf property in Kensington, became a member of the Master Shipwright's Society, and entered into ship-building on his own account. In 1790 he built a ship and a brig for a well known firm of importing merchants, receiving for the former $2,940.67, and for the latter $1,288.66, and did some $2,000 worth of repairs. In 1791 he built three ships, one as large as 325 tons, and repaired fifteen vessels, making a business of about $15,000. So each year from one to five vessels were built and a dozen or so repaired. Repairing in the time of wooden vessels was a very considerable item of expense to the owners and advantage to the ship-yards, the repairs in a few years often equaling the original cost of the vessel. Occasionally vessels of unusual character appear in Mr. Bowers' list, as the unusually large ship, "Samuel Smith," of 705 tons, built in 1796, for $24,000; the ship "Indostan," of 470 tons, built for the East India trade in 1795, at $31 a ton; the "Sela Eisha," a war vessel for the Dey of Algiers, built in 1798 under the inspection of the United States Government, probably a tribute vessel. She was a war schooner, pierced for thirty guns and two stern chasers, with sixteen sweeps. The close connection between the commerce and the ship-building of the time is shown by an incident of the year 1801, while Mr. Bowers was building the "Monticello," a ship of 400 tons. When the news of the peace of Amiens reached Philadelphia, the owner of the new vessel came and asked for delay, instead of the haste in the work of building her which he had before been urging. His supposition was that peace between England and France would make so much less trade for America that vessels would be in less demand, and money to pay for a new one would be a burdensome outlay. For several years a ship for the China and East India trade was launched from Bowers' yard each year. After 1816 several steamboats were built for use on the Delaware and other rivers. He achieved several triumphs of ship building, such as the completion of a brig of 200 tons in six weeks. In addition to the



MASSACHUSETTS, A COAST LINE BATTLE SHIP.

invitation from the Spanish government before mentioned, he served on several commissions and boards for our own government. In 1822 he ceased building, and in 1830 disposed of his ship-yard and retired from business. The record of his yard for its thirty-three years of work was as follows:—

	Built.	Repaired.
Ships	27	149
Brigs	18	101
Schooners	5	62
Steamboats	3	1
Sloops	1	6
Gunboats	. . . . .	4
Total	56	323

This is certainly a good record for a single ship-yard, whose only distinction from twenty or thirty others was that its archives have remained to us, while those of the others have been lost.

After the war of 1812–15 ship-building on the Delaware for a while remained active, but did not continue to be progressive. The East India trade still required its large ships, and the packet lines to Europe called for vessels which Philadelphia builders furnished in scarcely less perfection than any of those beautiful models which attracted the admiration of Europe. But the decay of the former trade, the comparatively slight development of the latter, and the stagnation of general commerce at the port, were reflected in the ship-building industry, which now came to be exceeded in amount and in merit by that of other places, and so remained until the era of iron ship-building had come.

Even during these later wooden ship-building days, however, some large undertakings showed the continued activity of the Philadelphia ship-builders. Besides the naval work, which will be described later on, a number of orders were filled for foreigners. In 1824 a Kensington builder sent off a fleet of gunboats ordered by the Columbian government, and another launched for the Mexican government a corvette named the Tepeac, of 1,536 tons burden, and carrying thirty twenty-four-pounders. She was considered a very large vessel, being 185 feet long, 24 feet wide, and 21 feet in depth of hold. The Mexican government failed to pay for her, and after numerous experiences she was bought by Baron Krudener for the Russian government, renovated, and left for Cronstadt in August, 1830. On the 20th of October, 1825, a vessel of 1,800 tons burden, to carry sixty guns, was launched and departed for sale abroad. Some clipper ships also were built in the forties and fifties, though not in large numbers. Among these were the Manitou, of 1,500 tons, the Bridgewater, of 1,525 tons, and the Morning Light, of 850 tons. The Arctic also made famous by Dr. Kane's expedition, was built at Philadelphia.

The following list of the vessels built at Philadelphia and their tonnage, in the year 1833, is given as typical of the work of this period:

Ships and Barks.		Brigs.		Schooners.		Steamboats and Sloops.	
Delaware,	479	Pedraza,	139	Veto,	5	Ohio,	314
Susquehanna,	586	Santiago,	126	Harriet Porter,	68	8 Sloops,	617
Julia,	395	James Coulter,	121	Ellen,	71		
Eagle,	221	Star,	129	Adelaide,	56		
Margaret,	244	Violet,	129	Ada,	152		
Girard,	485						
Kensington,	494						
Madeline,	293						

The period from 1846 to 1857, on account of a series of occurrences, was an active time for American ship-building, and to this activity there was a partial response in Philadelphia ship-yards, as is indicated in the general statistics which follow. During these years one firm built one hundred and seven steamboats with an aggregate tonnage of 21,018 tons.

The causes referred to were as follows: In 1846 began the great stream of European emigration to America. In 1849 the discovery of gold in California called for a great number of vessels to take from the eastern states not only the vast number of people who were rushing thither, but also all the supplies necessary for their maintenance while there. In 1854 the breaking out of the Crimean war diverted a great many English vessels from their ordinary uses to the service of their government, and this gave an opportunity for American vessels in various lines of trade. The result of this combination of causes was a rapid increase of American built ships, and consequent activity for American ship-builders.

But after about 1857 the inevitable reaction came. The demands of the California trade diminished, as the gold fever passed away and the western coast began to produce enough for its own consumption, the Crimean war was over and the English vessels returned to their usual routes. At the same time the steamship lines were absorbing the immigrant traffic. In Philadelphia, after this period, the wooden ship-building industry never revived. The civil war soon interfered with American shipping, high wages, taxes and other expenses, and the value of land made wooden ship-building in cities everywhere very difficult. The gradual change from wood to iron as the prevailing building material made less and less repair work available, and so militated against the wooden ship-builders. Especially in Philadelphia when the iron steam colliers of the Philadelphia and Reading railroad, about 1870, took the place to such a great extent of the great fleet of wooden vessels which had before taken the coal from the Delaware, the ship-builders felt the loss of repair work most severely. In 1892, of all the old yards which used to line the wharves of the upper and the lower sections of the city, but one establishment for building wooden ships is left.

Outside of Philadelphia there is still a considerable amount of wooden ship-building on the Delaware river and its tributaries. At Camden, op-

posite Philadelphia, there are three wooden ship-yards which build schooners of large size and do a considerable amount of repairing. At Wilmington, Delaware, there are two large yards which build wooden vessels, the Jackson and Sharp Company and Pusey & Jones. The former firm builds a great many large schooners, frequently with four masts and measuring as much as 1,800 tons. The second company make a specialty of the building of light-draft stern-wheel and side-wheel steamers for use on the South American rivers. At Mauricetown and Leesburg on the Maurice river, and Dennisville, Millville and Dorchester, all little towns of South Jersey, wooden vessels, oyster schooners and the like, are built, and likewise at Milford, Milton, Odessa and Lewes, in the State of Delaware. Yet altogether there are probably not so many wooden vessels built now along the whole length of the Delaware, as there were at Philadelphia alone fifty or a hundred years ago.

Of the 16,141 wooden sailing vessels in the merchant-marine of the United States in 1889, but 110, or about seven-tenths of one per cent., had been built in Philadelphia, and some of these were built a number of years ago. Of steam vessels, however, including both wood and iron, the proportion built in Philadelphia was much larger, being 441 out of a total of 6,636, or about six and two-thirds per cent. of the whole—probably a greater number than at any other one place. Of iron vessels alone the proportion is strikingly different, 150, or twenty-two per cent., out of a total of 673, having been built at Philadelphia. Including the 301 built at other places along the river, more than sixty-seven per cent. of all the iron and steel vessels in the merchant-marine of the United States have been launched on the Delaware.

The same period and some of the very causes which led to the decay of wooden ship-building gave rise to the iron ship-building which at Philadelphia and other points has now made the Delaware the greatest ship-building stream in the world, next to the Scottish Clyde. But before taking up this development it will be well to give some account of another branch of Philadelphia ship-building, that of war vessels for the United States government.

The following is a list, as complete as it can be made, of the vessels that have been used by the United States government for the navy, built at Philadelphia, either by the government, at private yards for the government, or purchased by the government from private owners.

Date of entrance to the navy.	Description.	Name.	Number of guns.	Tonnage.	Cost.
1776, . .	Ship, ...	Randolph, ...	32		
1776, . .	do.	Washington, . . .	32		
1776, . .	do.	Effingham, ...	28		
1776, . .	do.	Delaware, ...	24		
1797, .	do.	United States, . . .	44	1,576	$299,336
1798, .	do.	Ganges, ...	24	504	80,665
1798, . .	do.	Delaware, ...	20	321	59,563
1798, . .	Brig, ...	Eagle, ...	14	187	32,200
1798, . .	Schooner, ...	Diligenee, ...	12	187	
1798, . .	Sloop, ...	General Greene, . .	10	98	
1799, . .	Ship, ...	Philadelphia, . . .	36	1,240	179,349
1803, . .	Brig, ...	Siren, ...	16	250	32,522
1813, . .	Schooner, ...	Helen, ...	4	. . . . .	5,000
1814, . .	Sloop, ...	Buffalo, ...	5		
1814, . .	do.	Camel, ...	5		
1814, . .	Brig, ...	Prometheus, . . .	12	290	20,000
1814, . .	Frigate, ...	Guérrière, . .	44	1,508	267,554
1815, . .	do.	Franklin, ...	74	2,257	438,149
1820, . .	do.	North Carolina, . .	74	2,633	431,862
1821, . .	Schooner, ...	Dolphin, ...	14	198	25,389
1828, . .	Sloop of war, ...	Vandalia, ...	18	700	116,123
1836, . .	Steamship, ...	Relief, ...	6	468	91,300
1837, . .	Ship, ...	Pennsylvania, . .	120	3,241	694,500
1839, . .	Sloop of war, ...	Dale, ...	16	566	107,722
1840, . .	Steam frigate, . . .	Mississippi, ...	10	1,692	550,254
1843, . .	Steamship, ...	Princeton, ...	9	672	212,614
1843, . .	Frigate, ...	Raritan, ...	44	1,726	406,087
1846, . .	Sloop of war, ...	Germantown, . . .	22	939	166,343
1850, . .	Steam frigate, . . .	Susquehanna, . . .	9	2,450	710,408
1856, . .	do. . . .	Wabash, ...	40	3,200	
1858, . .	Steam sloop, ...	Lancaster, ...	18	2,360	
1858, . .	do. . . .	Wyoming.			
1858, . .	do. . . .	Pawnee.			
1861, . .	Steamer, ...	Keystone.			
1861, . .	do.	Hatteras.			
1861, . .	do.	Flag.			
1861, . .	do.	State of Georgia.			
1861, . .	do.	Delaware.			
1861, . .	do.	Louisiana.			
1861, . .	Sailing vessel, . . .	Kittatinny.			
1861, . .	do. . . .	Maria A. Wood.			
1861, . .	do. . . .	Adolf Huget.			
1861, . .	do. . . .	J. L. Davis.			
1861, . .	do. . . .	James S. Chambers.			
1861, . .	do. . . .	Rachel Seamen.			
1861, .	do. . . .	Samuel Rotan.			
1861, . .	do. . . .	George Manghan.			
1861, . .	Side-wheel steamer,	Juniata.			
1861, . .	do.	Monongahela.			
1861, . .	do.	Tuscarora.			
1861, . .	do.	Shenandoah.			
1861, . .	do.	Miami.			
1861, . .	Gunboat, ...	Wissahickon.			
1861, . .	do.	Scioto.			
1861, . .	do.	Itasca.			
1862, . .	Iron-clad steamer, .	New Ironsides, . .	. . . . .	3,250	
1862, . .	do. .	Tonawanda.			
1862, . .	do. .	Marietta.			
1862, . .	do. .	Manayunk.			
1862, . .	do. .	Sandusky.			
1862, . .	do. .	Sangamon.			
1862, . .	Side-wheel steamer,	Wyalusing, ...	. . . . .	970	
1862, . .	do.	Taeony.			
1862, . .	Screw steamer, .	Yantie.			
1863, . .	Iron-clad steamer, .	Shackamaxon.			
1863, . .	do. .	Umpqua.			

Date of entrance to the navy.	Description.	Name.	Number of guns.	Tonnage.	Cost.
1863, . .	Transport, ...	Stanton, ...	. . . . .	335	
1863, . .	do.	Walles, ...	. . . . .	335	
1863, . .	do.	Porter, ...	. . . . .	335	
1863, . .	do.	Foote, ...	. . . . .	335	
1863, . .	Monitor, ...	Yazoo, ...	. . . . .	2,500	
1863, . .	Screw steamer, . . .	Chattanooga, . . .	. . . .	3,300	
1863, . .	do. . . .	Neshaminy.			
1863, . .	do. . . .	Pontiac.			
1863, . .	do. . . .	Shamokin.			
1869, . .	do. . . .	Omaha.			
1877, . .	do. . . .	Quinnebaug.			
1883, . .	Monitor, ...	Terror, ...	. . . . .	3,820	
1889, . .	Protected cruiser, .	Philadelphia, . . .	29	4,324	1,485,600
1889, . .	Cruiser, .	Yorktown, ...	6	1,703	494,825
1889, . .	Dynamite cruiser, .	Vesuvius, ...	3	911	350,000
1890, . .	Protected cruiser, .	Baltimore, ...	24	4,400	1,431,441
1891, . .	do. .	Newark, ...	29	4,083	1,284,867
1892, . .	Armored cruiser, . .	New York, ...	34	8,150	
1892, . .	Building, Cruiser, .	No. 12, ...	17	7,475	
1892, . .	do. do. .	No. 13, ...	17	7,475	
1892, . .	do. Battleship,	Indiana, ...	46	10,200	
1892, . .	do. do.	Massachusetts, . .	46	10,200	

Total number of vessels in the navy of the United States built at Philadelphia, 93.

The vessels built for the United States government at other points on the Delaware river were: Wateree, Tunxis, Nina, Pinta, Sagamore, Lehigh, Tahoma, Paul Jones, Suwanee, Shamokin, Ranger, Patapsco, Saugus, Napa, Amphitrite, Boston, Atlanta, Chicago, Dolphin, Concord, Bennington—total on the Delaware, 114.

The first four on this list were ordered by Congress in 1775 to be built at Philadelphia, nine others being distributed at the same time at other ship-building points. Our vessels were all unfortunate. The Delaware was captured while aground in the river during the blockade in 1777, the Washington and the Effingham were burned by the British in Delaware Bay, 1778, before having received their armaments. The Randolph blew up at sea in the same year, March 7, 1778, her three hundred and eleven men perishing with her. When the Revolution was over it was hoped that there would be no further need for a navy, and the new government was for a while entirely without one. But soon the depredations of the Barbary pirates, and a few years later those of the warring navies of England and France made it evident that the possession of a navy of some sort was an absolute necessity for us. The question of what kind of vessels to build immediately came up for discussion, and it was the ideas, the plans and the actual moulds of a practical Philadelphia ship-builder that were ultimately adopted. This man was Joshua Humphreys. Descended from a well-known Welsh quaker family, he had came from the country and been apprenticed about 1763 to a Philadelphia ship-carpenter. On the death of his master he took charge of

the ship-yard, even before the expiration of his years of apprenticeship, and in 1785 established a yard of his own in Southwark. He was one of a group of famous builders of that period, as we have before seen, and in 1792, when the navy had become a matter of general interest, he ventured to send letters giving his views of the needs of the situation to Robert Morris and to General Knox, then Secretary of War. In these suggestions are already to be discerned the principal elements in American success in ship-building, originality and adaption to our own circumstances. Humphreys claimed that as the number of our vessels would necessarily be inferior to that of European navies, our vessels must be light enough and fast-sailing enough either to decline a battle or accept it at will; and yet if our vessels should enter a battle they must be equal in fighting abilities, vessel for vessel, to any vessels of any size. He proposed therefore to make the vessels larger and longer, and yet lower than the existing type. The same number of guns could then be placed on one deck as had previously been placed on two, and either in heavy winds or light they could outsail existing European ships, could easily overcome those of the same rate and meet on equal terms those of a higher rate. His suggestions were accepted, and when congress ordered the building of six ships of war, Humphreys was instructed to prepare the models for them. He did so, and the six vessels, Chesapeake, Constellation, Constitution, President, Congress and United States were built at various places on his model, the last in his own ship-yard at Southwark, Philadelphia. The ship-of-the-line, Philadelphia, launched in 1799, was also built by Humphreys at his own yard The work done by these vessels fully justified the ideas of their builder, the familiar career of the Constitution, built at Boston, from Humphreys' model, having been truly remarkable, while the United States, the first vessel of the national navy to be launched was still in the service sixty years afterward. Their model exerted a very great influence, not only on our own subsequent navy, but on that of England and of other countries as well. Samuel Humphreys, the son of Joshua, was brought up in the ship-yard, taking charge of the business in 1808, being appointed constructor for the Philadelphia Navy Yard in 1813, and chief naval constructor of the United States in 1826, a position which he held till his death in 1846. He was followed in it by John Lenthall, a ship-builder brought up under Humphreys' influence. One of the most constant of the influences therefore that have controlled the American navy, in the past as in the present, has emanated from Philadelphia.

The next vessel on the list, the Ganges, was purchased by the government from owners by whom she had been used as an Indiaman. She was subsequently, in 1801, sold and returned to the mercantile marine.

The subject of government navy yards was discussed at the same time as the new navy, and in 1801 the President on his own authority used part of the naval appropriation for the purchase of six sites on different

MISSISSIPPI, U. S. NAVAL STEAMER, BUILT IN PHILADELPHIA IN 1844.

parts of the coast, one of which was at Southwark, a suburb of Philadelphia. At this almost all the government work done at Philadelphia was carried on until the breaking out of the civil war. Its insufficient size, however, had been long recognized, and in 1868 the government finally accepted the gift of League Island from the city of Philadelphia, disposing of the old site for $1,000,000. This new navy yard has never been put in a condition to construct or even make extensive repairs in modern vessels, but valuable improvements are now being made, and its admirable situation cannot help but bring it at length into use and prominence.

The vessels of 1814 and 1815, the Guerriere and the Franklin, and the ship-of-the-line Pennsylvania, launched in 1837, were the wonders of their time for size. The steam frigate Mississippi, launched 1840, was long considered the most useful steamer in the navy. She was Commodore Perry's flagship during the Mexican war and in his expedition to Japan. She also conveyed Kossuth from Turkey to France and his comrades in exile to this country. The steam sloop of war Pawnee was one of the first vessels to be built with machine bent timbers, hers being from twenty to thirty-four feet in length, while the previous custom had been to use only short pieces and to hew them into shape.

When the war broke out, in 1861, the navy yards were immediately overwhelmed with the demands made upon them, and the government was forced to have recourse to the purchase of merchant vessels, and to giving contracts for building to private ship-yards. One hundred and ninety-six vessels were bought outright, and of these the first fourteen on the list given above under the date of 1861, had been built at Philadelphia. The other vessels on the list during the war period were built some at the navy yard, others by private builders. Of these the Hatteras is of some interest as having been sunk by the Alabama in the first naval engagement ever fought on the ocean between two steamers. The New Ironsides, the first ironclad of the navy, was a notable vessel in many ways. She was built by William Cramp & Sons, and was considered not only as a new factor in naval warfare, but as a triumph of successful ship-building. Within six months from the time when the contract for her had been signed, her timber had been cut from the woods, her hull built, covered with its belt of iron above the water, and she was steaming on her way to Charleston. The private ship-yards continued to be more than busy during the whole war, notwithstanding the 10,000 to 12,000 men engaged in each of the four northern navy yards. These were kept busy in repairs and the building of smaller craft, while the larger war vessels were built on contract for the government. One of the largest vessels built was the steam frigate Chattanooga, of 3,500 tons, also built by the Cramps, and launched in 1864.

After the war there was very little naval building until the present reorganization of the navy was determined on in 1886. The last ten vessels on the list, the major part of our navy, lately constructed or now

building at the yards of William Cramp & Sons are too familiar to need description, and it is only to be noticed that this work is not only a *bona fide* Pennsylvania achievement, but is also the crowning work of one of the old historic firms of Philadelphia ship-builders.

During the last thirty years the history of ship-building on the Delaware has been largely the history of iron ship-building. The question of material has always been the most important element in this art, and the material for wooden ships during that period has been in Philadelphia comparatively scarce and high in price, while for iron vessels it has been abundant and cheap. When one realizes that the building of every large wooden ship requires the felling of from one hundred and sixty to two hundred and fifty trees, each from one hundred to two hundred and fifty years old, and that ship-building has been going on along the Delaware for almost two centuries, one does not wonder that material should eventually become scarce. The principal material was always white oak, though southern live-oak was imported and used here from an early period, at times almost exclusively, and other local and imported materials were used for subordinate parts. White oak existed originally along the whole Atlantic coast, but has long disappeared in any large quantities from everywhere north of the Delaware. Here it long remained in apparently inexhaustible quantities and of the very best quality, due it is supposed to its comparative proximity to the ocean and other advantages of soil and location. The lasting quality of Philadelphia vessels built of it was famous, as evidenced by the experience of the vessels of the Cope line of packets and others. Even yet one of Stephen Girard's old vessels, the Rousseau, of 305 tons, built in 1801, is enrolled as being in service at New Bedford, Massachusetts.

As late as 1862, a large business was done by cutters on the Delaware in sending wood to New England. From April, 1860 to October, 1862, one dealer reported having provided forty ships of Maine and Massachusetts with timber, in some cases the timber for the whole vessel, in others only the masts and spars. One firm, in the year 1862, sent 2,203,550 feet of ship timber to the same two states, in addition to several masts, being the cargoes of thirty-three schooners. For each of the years from 1858 to 1863, they had loaded a ship to Bremen, Germany, with mast timber and ship stock. In the year 1862 five other dealers estimate their shipments at 2,100,000 feet, and three others further down the river at 650,000 feet. All the long timbers for the New Ironsides, one hundred and twenty planks, thirty-eight feet long, twenty-two inches wide, and fourteen inches thick, were cut within twenty-five miles of Philadelphia, in the middle of winter and with water navigation closed. During the war a dread of the failure of white-oak timber became prevalent and large amounts were cut and stored in the navy yards for future use. But even yet sufficient timber is found for the wooden vessels built at Wilmington and the smaller ship building towns in Delaware and in New

Jersey, and the scarcity is indicated rather by the high price of timber than by any actual difficulty in obtaining material.

Nevertheless iron is relatively cheaper here, as it has proved to be for many uses better than wood. In England it was probably this same increased cost of material which induced the building of the first iron boats, though for lighters and such vessels iron had other advantages than cheapness. As early as 1820, at least, iron vessels were built in that country and it was a very few years afterward when they appeared here, though it is possible that the first were brought over from England in sections and put together on this side. In early years we hear a tradition of an iron vessel built in Philadelphia several squares from the river, and carried down on trucks to be launched. Harlan & Hollingsworth, of Wilmington, Delaware, claim to have built the first iron steamboat in America in 1834. The early iron vessels were not built in the ship-yards but in the rolling mills. They belonged to iron manufacture rather than to ship-building. The iron manufacturing firm engaged a builder of wooden ships to prepare for them a model of a vessel, to lay down the mould for it in their shop, and to oversee its construction till its launch, themselves providing material and labor. Subsequently the iron men engaged regular mechanics from the ship-yards, vessels, and engines for them, became a more and more important part of their business, and so ship-building was superimposed on the iron manufacture. It is only exceptionally, as in the case of the Cramps, that a wooden ship-building establishment has deliberately changed its material, and become an iron-using establishment.

In the thirty years from 1830 to the outbreak of the war, iron vessels were built at Philadelphia, but apparently neither of such size nor so numerously as at New York, and perhaps other places. The large number of active engine building establishments here seem to have been the principal inducement for the building of such iron vessels as were constructed here during that period, as steamboats were the only vessels that demanded that material, as is still the case in America. The activity of the building of iron vessels everywhere in America was very closely connected with the price of iron. This was far more true then than now, the early crude methods of using the material being very wasteful when compared with the nice calculation of present ship-building. For a long time, for instance, all the plates were furnished in parallelograms, the extra amount being sheared off when they were fitted on the ship. Mr. Charles H. Cramp was one of the first to introduce a saving of material by shaping the plates at the time of their manufacture. Now the plates, angles, bars, stanchions, frames, beams, etc., are frequently ordered and rolled to measure and shape at the iron works, leaving but little except some trimming, planing and rolling out of inequalities to be done at the ship-yard. In a careful calculation from a chance vessel being built at Roach's at Chester, this year, the

cost of the material, and that of the labor, the two great elements of expense, were almost exactly the same. According to the character of the material and class of the vessel these relative proportions of cost of labor and cost of material may vary a great deal. Labor has been much more stable than price of material, and the steady fall of the latter for some years now has made it constantly of less extreme importance in ship-building.

In the early forties iron was declining in price, reaching twenty-five dollars a ton in 1842, and twenty-four dollars a ton in 1844. It was during this period that two of the present great Delaware river firms, Neafie & Levy of Philadelphia, and Harlan & Hollingsworth of Wilmington, began building iron vessels regularly. In the later years of the same decade railroad building brought iron up in price again and activity in iron ship-building decreased correspondingly. With the exception of a temporary fall in the year 1850, iron remained high until 1858. In 1854, it had been fifty-four dollars per ton, in 1858 it fell to twenty-one dollars and fifty cents. During all these years but few iron vessels had been built. Now, however, both materials and wages were comparatively low, American builders were learning to handle iron, and also learning the peculiar merits and strength of our own iron, workmen had become used to working in an iron ship-yard, and a normal development would doubtlessly have taken place, if the war had not broken out and initiated an entirely new era.

The influence of the naval requirements of this war on iron ship-building was of extreme importance. Neither the price of iron nor the rate of wages for a long time governed its activity, for with pig iron at $73.50 per ton and wages at double their recent rate, as was the case in 1864, no iron ships at all could have been built under ordinary circumstances. It was only the absolute necessity of the government which had to have the strongest possible vessels and had to have them immediately which made the ship-yards busy. Under the circumstances the navy yards of course were entirely overwhelmed, as has been already explained, and recourse was had to private yards. Many of the proprietors of these yards in Boston, New York, Philadelphia, Chester and Wilmington anticipated this necessity and made preparations to meet it by the introduction of extensive machinery and other equipments. An iron ship-building establishment is very different in its requirements from one where wood is the material used. The capital required in the latter is very small. Most of the tools are owned by the individual workmen, and an establishment building very large ships has often not more than $5,000 or $10,000 invested in its plant. An iron ship-yard however, is a concentration of a dozen or more establishments, many different trades being represented, massive and expensive machinery required, an immense amount of capital invested, and operations necessarily being carried on on a large scale. Large amounts of material moreover have to

U. S. DISPATCH BOAT, DOLPHIN.

be ordered and frequently paid for at one time. So in the early years of the war the iron ship-builders invested sums ranging from a quarter of a million to a million dollars in the equipment necessary to perform the government work.

When the demand came the private ship-yards were able to begin the work for the government, and the vast expenditures of the government in turn made it possible to extend the yards and provide for them a still larger equipment. Sad as were the causes which made the war ships necessary, and burdensome as was the payment upon the government and the people, yet the art of iron ship-building in America was thereby put on a firm basis of capital, skill and excellence.

From 1864 to 1870 the ship-yards were all alike dull. The government orders had ceased, iron was dear and wages were high. After 1870, however, things began to improve; iron went down rapidly in price, reaching its lowest point in American history, $16.50, in 1878, and it has remained since at a moderate price. Under these circumstances iron ship-building again became active for the river and coasting trade for companies in South America, and for some foreign trade of American companies. Two new yards were opened, one at Philadelphia, another at Marcus Hook, although both were closed after a few years existence. One of the old yards at Chester changed ownership and entered on a new period of energetic work. In 1883 government work was again begun in the reconstruction of the United States navy. Philadelphia's old lines of wooden coasting steamboats, many of them side-wheel steamers, were wearing out, and these were to be renewed and replaced by iron-propellor steamers. Certain firms have made a specialty of iron steamboats for river use; others have built fine ocean-going steam yachts; still others have done a general business in iron steamers for commercial use, while some have made government work a specialty. During this period also the special facilities of Philadelphia and its vicinity told so strongly that most of the iron ship-building of the Atlantic coast came to be concentrated in the district along the Delaware river. This superiority of location consists largely in the proximity of the great iron manufacturing establishments, not only in Philadelphia itself but in many towns along the Delaware and the Schuylkill, and inland—Chester, Phœnixville, Pottsville, Coatesville and Bethlehem, and in great centers further within the state, such as Harrisburg and Pittsburgh. Back from this part of the Atlantic coast lies a great circle of furnaces, rolling mills, and other establishments producing the best of iron and steel in the most favorable of circumstances. The deep stream of the river close up to the ship-yards, the fresh water, with its comparative immunity from rust, above all the long-established habits, skill and reputation of the builders and their employes—this group of advantages makes it no wonder that iron ship-building has been steadily increasing

here, while it has been decreasing at many other places. The climate also is considered particularly favorable, being free from the enervating effects of the coast districts of the south, and not liable to the long-continued severe winter weather of New England, which interferes so seriously with such outside work as ship-building. It is true that just in recent times new activity has been displayed in iron ship-yards at Baltimore, Md., Newport News, Va., Bath, Me., San Francisco, Cal., and Puget Sound, Washington, but it is still too early to tell whether these are destined to play a part of any considerable rivalry to the establishments on the Delaware.

The iron ship-building yards at present in existence on the course of the river are as follows:

The Pusey and Jones Company, Wilmington, Delaware.

The Harlan and Hollingsworth Company, Wilmington, Delaware.

John Roach & Sons, Chester, Pa.

John A. Dialogue, Camden, New Jersey.

Neafie & Levy, Philadelphia, Pa.

The William Cramp and Sons Ship and Engine Building Company, Philadelphia, Pa.

The Pusey and Jones Company have made a specialty of building light-draught stern-wheel and side-wheel steamers for use in shallow rivers. They have built probably as many as a hundred such iron steamers for foreign orders, principally for use in the South American rivers, having made a special study of the requirements for this service.

The Harlan and Hollingsworth Company was established in 1836. In 1843 they began ship-building, and in the next year launched three iron vessels. Two of these were but small, the third, the Bangor, was an iron propeller steamer of 450 tons, claimed to be the first iron coasting steamer built in the United States. During the war they did a great deal of work for the government, including the building of the following vessels:

Iron clad sloop of war Ranger.

Iron clad monitors Patapsco, Saugus and Napa.

In 1869 they built an iron sailing vessel, the bark Iron Age, of 650 tons. They have made something of a specialty of iron and steel yachts, having built a dozen or more that have been famous, such as Mr. Astor's Norumahal, Mr. Vanderbilt's Alva, and Mr. Gallatin's Almy. The company has built most of the steamers for the Old Dominion Steamship Company, a number for the Panama Railroad Company, for the Charles Morgan and other well-known lines. They build iron vessels only, and have altogether built some two hundred and fifty, of about 175,000 total tonnage. Since 1886 they have built thirty-three iron and steel vessels, altogether of 30,000 tons, varying in size from a little steam yacht of 123 tons to an iron and steel screw steamer of 2,400 tons. The establishment is the largest industry in the city of Wilmington, with

PACIFIC MAIL STEAMER, CITY OF PEKING, BUILT IN CHESTER.

the greatest area of any ship-yard in the world—a dry dock, and all of the most extensive and best facilities for building and fitting out iron ships. They manufacture, in addition to iron and steel vessels of all kinds, and engines and boilers, both land and marine, railroad and other cars of all descriptions. They employ about 2,000 hands, though the facilities will admit of 3,000, and the pay-roll amounts to between $30,000 and $40,000 per week.

The Delaware River Iron Ship Building and Engine Works, of John Roach & Sons, at Chester, is the successor to an older iron ship-yard, that of Reaney, Son & Archbold, founded in 1860. In this Mr. Reaney had invested, it is said, almost a million dollars, and had built something over one hundred vessels. During the war he built three monitors, the Sangamon, Lehigh and Tunxis; one gunboat, the Tahoma, four "double-enders," the Paul Jones, Wateree, Suwanee and Shamokin, and two small iron screw steamers, the Nina and the Pinta. In the dull times following the war, however, the firm was not able to meet its liabilities, and the yard was disposed of, in 1871, at private sale, to Mr. John Roach of New York. In 1872 the latter, already the owner of the Etna, Morgan and Allaire iron and engine building works in New York, organized a company and began building iron vessels at Chester. The first ship was launched in 1873. Subsequently from four to ten large steamers were built every year with an average annual tonnage of 14,800 tons. For a while, therefore, the yard became the most important in the United States. In the twenty years of their existence they have built over one hundred large vessels. The total tonnage up to 1882 was 148,000 tons. Since that time it must have risen to 225,000 tons. In the year of largest production they built 28,190 tons. The City of Peking and City of Tokio, built in 1874, are the largest merchant vessels yet built in this country. They are each 419 feet long, and measure 5,080 tons each. The Roachs have built for the government the Alert, Miantonomoh and Puritan, and the earliest vessels of the new navy, the Boston, Atlanta, Chicago and Dolphin. The unfortunate dispute as to the acceptance of the last of these vessels belongs to political rather than industrial history. They have now been long accepted, have been paid for, and have performed good service. The company have since refused to bid on government work, though two of the recent vessels, the Concord and the Bennington, have been built by them as sub-contractors under N. F. Palmer, Jr., & Co. The firm reports having been very busy since about 1887, having refused about as much work as they have accepted. In 1889 the contracts on hand amounted to about three and one-half million dollars. They have built a large number of vessels for the well-known American steamship lines, including sixteen vessels for the Mallory Line, thirteen for the Pacific Mail Steamship Company, and several each for the Old Dominion Steamship Company, the Ward Line, the Oregon Steamship and Railroad Company and others. Their

material, as that of other yards along the Delaware, is ordered from Coatesville, Phœnixville, Harrisburg, Pottsville and other iron manufacturing towns, some from as far away as Pittsburgh, and some from Chester itself. The establishment is the largest industry in Chester and during its existence has practically created one whole section of that city. The yard includes about twenty-five acres, with a splendid water frontage of some 2,000 feet, and with the full depth of the Delaware into which to launch their vessels. The paid-up capital of the concern is now $433,000. The pay-roll has averaged for the last twenty years from $500,000 to $600,000 a year, the number of employes having varied from 500 to 1,500 men. At present the number of men employed is 700 and the weekly pay.roll is $7,600.

At Kaighn's Point, in Camden, N. J., John A. Dialogue has an iron ship-building establishment at which small iron tugs, light-house tenders, iron pilot boats and such vessels are built. The first steam pilot boat built of iron in the United States was built here for service at New Orleans. Four or five iron tugs a year are built, and there are generally as many as three under way at once. About fifty men are employed on the average.

At Philadelphia, as has been said, there are two iron ship-building establishments. The Penn Works of Neafie & Levy, and the William Cramp and Sons Ship and Engine Building Company. The former was established in 1838 by Jacob Neafie. In 1844, under the firm name of Reaney, Neafie & Co., they began ship and engine building along with other forms of iron work. They built the engines for a great many government steamers both before and during the war, and have done a large business in the special manufacture of propellor wheels for vessels. They build also iron merchant vessels of all kinds, tugs, ferry-boats and river craft. Scarcely a year has passed since 1844 in which they have not launched at least one vessel and frequently as many as six. Altogether they have built some one hundred and twenty-five vessels. Their location is at an eligible point on the river front, but the yard is not large enough to admit of them building the largest class of modern vessels.

The William Cramp and Sons Ship and Engine Building Company, which has long been famous, and in recent years has became of national interest, through building far the greater part of our new navy, is, as has been formerly remarked, the development of one of Philadelphia's old wooden ship-yards. This was founded by William Cramp in 1830. Mr. Cramp was born in Kensington, a ship-building suburb of Philadelphia, in 1807, educated in the public schools till he reached his sixteenth year, when he was apprenticed to Samuel Grice, one of the best known ship-builders of the time, the builder of the "Guerriere" and other famous vessels. After completing his term of apprenticeship, Mr. Cramp worked as a journeyman ship carpenter until 1830, when he secured some

MONMOUTH, IN THE DRY DOCK, AT PHILADELPHIA.

property fronting on the Delaware and established a yard of his own. This was one of a considerable number of yards in the same section of the city, and was occupied in building wooden sailing vessels and steamboats. Between 1830 and 1860 something over one hundred vessels were constructed in his yard. They included a few ships, one of them, the "Bridgewater," as large as 1,500 tons, a number of smaller sailing vessels, mostly brigs and schooners, a large number of steamboats for river and coasting trade, the "Samson," the first tug boat built in America, the two city ice-boats, and a number of other steam tugs and ferryboats. The efforts to meet the requirements of the war period, the participation of this firm in the building of the war navy, and the effect of that period in laying the foundation of the present greatness of the establishment, have been already spoken of. Mr. Cramp built eight vessels for the government during that time with a total tonnage of 11,360 tons, in addition to repair work and refitting of other vessels.

The period immediately following the war was, as has been said, a dull period for all ship-building. The next step forward taken by this firm was when they obtained the contract for building the four iron steamers for the new American Line, in 1871. The Pennsylvania, Ohio, Indiana and Illinois were built in the years 1872 and 1873. These vessels, of 3,125 tons each, made the wider reputation which the firm now gained, and its work has subsequently been of a notable character. In 1876 the Cramps were engaged by the Russian government to do some important repair work, and were subsequently employed by the same government to build the three cruisers, Asia, Europe and Zabiaca. In 1871 the company gave up finally the building of wooden vessels, restricting their work to iron and steel. Altogether they have built six iron steam colliers for the Reading Railroad Company, of 1,283 tons each; seven ocean steamers for the New York and New Orleans Line, ranging from 3,000 to 4,500 tons each; three ocean steamers for the Central Pacific Railroad Company, of over 3,000 tons each; five for the Red D Line, between New York and Venezuela; four others, each above 2,500 tons, for the Clyde Line; eight for the Havana service, and some twenty others for various lines. Many river and sound steamboats, ferryboats and tugs also have been built since 1870. One of the few iron sailing vessels in the American merchant marine, the three-masted schooner Josephine, of 365 tons, was built by the Cramps.

When the construction of a new navy was resolved on a few years ago, and bids to conform to the government specifications were called for, the Cramps proved to be one of the most successful competitors, and the work as far as completed has attained high success and won great praise. Six great war vessels have been launched since 1889, and four are still in process of building. Two of these are of more than 10,000 tons displacement, and are contracted for at a price of $3,063,000 each, besides premiums to be given for additional speed.

During this period of rapid growth new ground has been acquired

by the firm; in 1872 it was incorporated, a few years afterward the old iron and engine-building works of I. P. Morris & Co. were purchased, new capital has been invested, and the development of the theoretical side of ship-building has gone on concurrently.

In the development of marine engines, contrary to the case in hull-building, this country was for some time behind England. The practical introduction of the compound marine engine into American use was in the steamship "George W. Clyde," built by William Cramp & Sons in 1871. During the next decade many improvements in engines were made on the foundation of the use of double expansion. The steam yacht Atalanta, built by the Cramps for Mr. Jay Gould in 1882, was considered to have the most perfect engines of this type. In 1885 they built the Peerless, a steam yacht, at a cost of about $100,000, as a practical experiment in the use of triple expansion engines. Almost all vessels built by this firm since that time have had their engines of this type, and indeed almost all marine engines are now of triple expansion. The Vesuvius, with twin screws and triple expansion engines, has developed a speed of 21⅔ knots per hour. The two war cruisers now being built have triple expansion engines and three screws, and are guaranteed to reach 21 knots per hour.

During the whole existence of this establishment, from 1830 to 1892, the number of vessels built and an approximation to the tonnage has been as follows:

18	war vessels,		97,843 tons.
2	light-house tenders,		590 "
6	steam yachts,	over	1,231 "
68	ocean steamers,		126,486 "
22	steamboats,		10,046 "
54	tugs and towboats (averaging 175 tons each),		9,450 "
7	ships,		7,024 "
1	bark.		
7	brigs.		
13	schooners.		
11	vessels lengthened and rebuilt.		
58	vessels, such as sloops, lighters, barges, floating docks and caissons.		
Total number of vessels, etc., 267.			
	Total tonnage of larger vessels,		192,670 "

Some further statistics of the present condition of the establishment are as follows:

Area of works,	24 acres.
Water front,	1,229 feet.
Depth of water in front,	36 feet.
Basin dry-dock,	462 feet long.
	111 feet wide.
Marine railway,	1,000 tons capacity.
Number of employes,	3,200
Weekly pay-roll,	$34,000
Total tonnage under construction,	43,696 tons.
Total value of contracts in hand April 7, 1892 (to be finished before the end of 1893),	$14,526,000

The following table is intended to give the number and tonnage of vessels of all kinds built at Philadelphia since the Revolution, as far as any such statistics are now attainable.

The number of vessels built in the years from 1781 to 1787 is probably not complete, as it only includes such as cleared from Philadelphia on voyages during that period, as explained in the text. For 1793 and the first six months of 1794 the tonnage built has been found, but not the number of vessels, except for four months in the middle of 1793, when the number was 9 ships, 2,462 tons; 9 brigs, 1,542 tons; 3 schooners, 344 tons, and 5 sloops, 270 tons. In 1795 and 1796 the number of vessels of each description has been found in a contemporary record, but not the tonnage. It is a matter of regret that the statistics of ship-building during the active period from 1796 to 1825 cannot be found, except the slight indications mentioned in the text. But no public record seems to have been kept, or at least none is now discoverable. Even the statistics for the decade from 1825 to 1835 are gathered from an account kept in a contemporary commercial journal. Those of the years that follow are from the records of the United States Commissioner of Navigation. The year for which the statistics are given is the government fiscal year, ending on the first of June. After the year 1868, they include the whole customs district of Philadelphia, including Chester, and since 1880 Camden, at the latter of which places almost all the wooden vessels recorded for recent years are built. There is considerable reason to doubt, however, whether these official figures are by any means complete.

NUMBER AND TONNAGE OF VESSELS OF VARIOUS KINDS BUILT ANNUALLY IN PHILADELPHIA.

	STEAM VESSELS.		SHIPS AND BARKS.		BRIGS.		SCHOONERS.		SLOOPS, BARGES AND CANAL BOATS.		TOTAL.	
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
1781,			4	910	3	210					7	1,120
1782,			9	1,575	4	227	9	344			22	2,146
1783,			13	2,943	15	1,243	4	91	8	200	40	4,447
1784,			21	3,665	13	1,302	3	125	7	211	44	5,303
1785,			8	1,560	5	530	1	50	6	322	20	2,412
1786,			1	145	4	370	2	54	6	336	13	905
1787,			2	483	10	963	1	65	3	133	16	1,644
1793,												8,145
1794 (½ year),												2,059
1795,			10		9		5		7		31	
1796,			5		9				8		22	
1825,	1	254	8	4,109	16	2,888	5	343	5	204	35	7,894
1826,	4	900	6	3,361	10	1,925	19	1,046	12	355	51	7,587
1827,	1	247	4	1,248	7	1,426	16	905	9	368	37	4,194
1828,	1	230	11	4,658	5	727	5	448	15	453	37	6,516
1829,	2	641	2	723	8	1,486	4	390	9	281	25	3,521
1830,	3	608	2	553	3	579	8	486	14	361	30	2,590
1831,			5	1,936	4	859	7	392	10	336	26	3,525
1832,	1	125	4	1,732	2	300	6	482	11	516	24	3,159
1833,	1	314	8	3,196	5	644	5	351	8	410	27	4,916
1834,	1	307	1	544	3	588	3	241	10	506	19	2,483
1835,	6	1,166	3	1,240	2	328	12	681	16	971	39	4,386
1836,	2		2		3		4		3		14	2,587
1837,	2		3		2		5		3		15	3,282
1838,	2		4		4		5		13		28	3,567
1839,	4		4		7		14		13		42	5,086
1840,	1		6		6		12		78		103	8,135
1841,			1		4		10		78		93	5,615
1842,	1		1		4		3		158		167	9,306
1843,	3		3		3		2		35		46	3,922
1844,	2		4		3		2		96		107	6,937
1845,	8		6		4		7		100		125	9,111
1846,	6		2		2		15		87		112	8,280
1847,	8		8		2		28		80		126	12,457
1848,	5		7		4		26		161		203	19,671
1849,	9		3		2		26		102		142	13,741
1850,	17		7		1		34		107		166	18,150
1851,	26		4		3		14		71		118	20,056
1852,	20		4		1		18		61		104	16,929
1853,	22		1		4		28		102		157	24,426
1854,	14		6		4		26		110		161	24,122
1855,	23		10		1		20		146		200	33,829
1856,	8		4		2		11		168		193	19,695
1857,	11		2				21		89		126	14,787
1858,	12		2				14		49		77	10,339
1859,	4		1		1		7		58		71	9,887

NUMBER AND TONNAGE OF VESSELS OF VARIOUS KINDS BUILT ANNUALLY IN PHILADELPHIA—*Continued.*

	STEAM VESSELS.		SHIPS AND BARKS.		BRIGS.		SCHOONERS		SLOOPS, BARGES AND CANAL BOATS.		TOTAL.	
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
1860	12		1		2		16		57		88	11,941
1861	11		1		3		19		74		109	14,250
1862	18		2		2		17		83		121	20,330
1863	64				6		14		209		293	36,592
1864	67				3		28		249		347	46,635
1865	32		1				28		179		240	31,694
1866	44		1		1		28		169		243	35,416
1867	6				3		37		117		163	23,794
1868	4		3				13		83		103	12,565
1869	22				1		15		53		91	9,724
1870	6						18		47		71	10,339
1871	14				1		13		114		142	15,639
1872	26				1		18		258		303	27,005
1873	26						24		111		161	25,712
1874	33	16,368			1	419	23	7,179	63	7,022	120	31,198
1875	30	18,334	1	487			22	6,206	8	585	61	25,914
1876	31	13,436					12	1,776	14	816	57	16,028
1877	17	6,514	1	680			1	554	5	46	24	7,794
1878	24	21,299	1	666			4	1,176	3	40	32	23,181
1879	28	19,506			1	284	4	1,212	1	12	34	21,014
1880	28	16,958	1	741			10	3,553	4	43	43	21,295
1881	42	22,087					10	3,248	4	462	56	25,829
1882	38	24,470					10	4,043	7	479	55	28,992
1883	41	34,264	2	2,610			19	7,174	3	463	65	44,511
1884	35	23,046	2	3,786			6	1,957	3	17	46	28,816
1885	24	22,172					8	3,792	5	85	37	26,049
1886	19	6,118					4	1,807	4	508	27	8,434
1887	20	22,155					3	438	8	594	31	23,189
1888	17	2,705					3	266	4	383	24	3,355
1889	19	16,458					4	1,237	37	3,840	60	21,535
1890	25	29,369					5	2,547	4	359	34	32,276
1891	27	17,235					6	4,117	6	50	39	21,402
1892 (10 months)	19	2,408					3	2,113	2	147	24	4,668

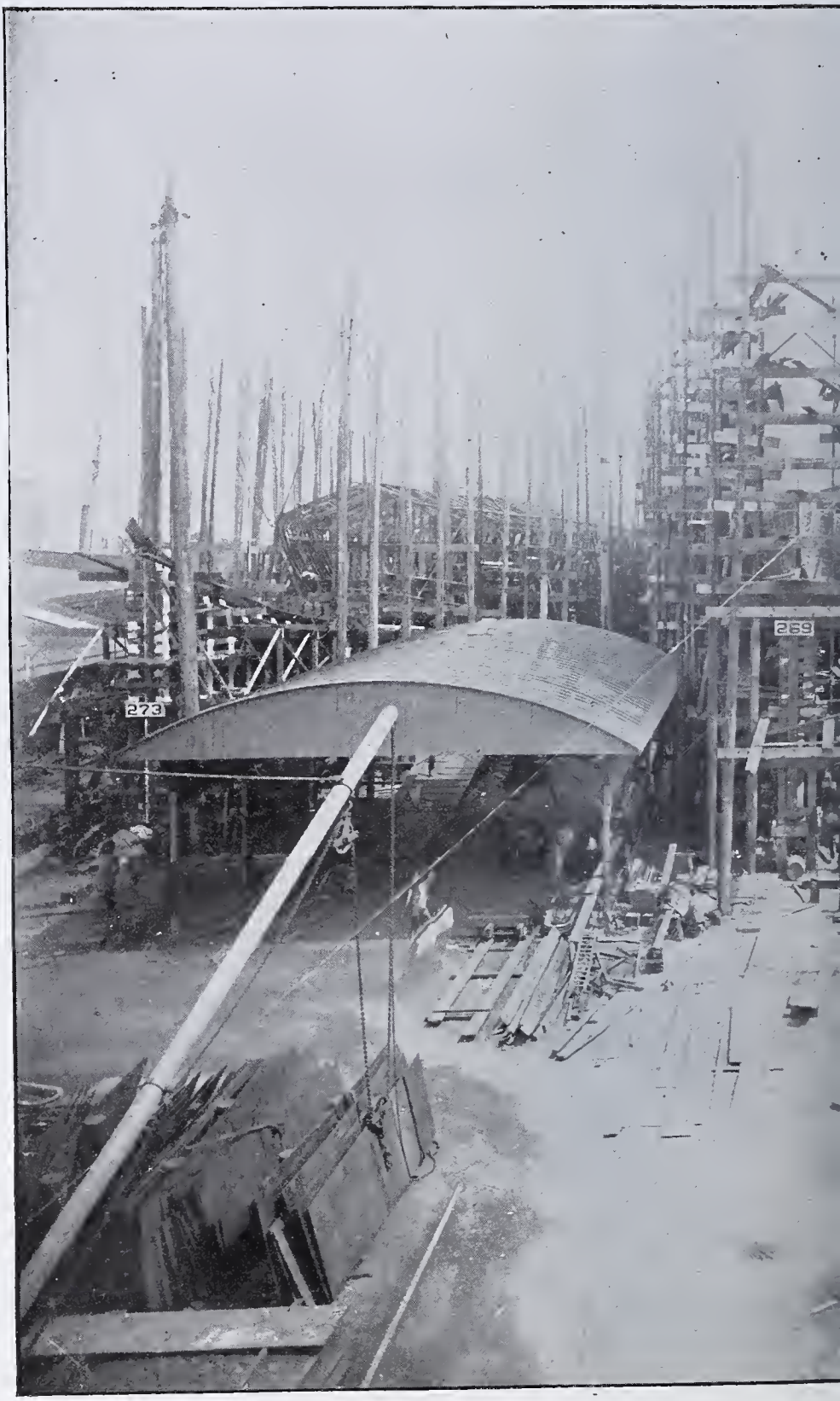
SHIP-BUILDING IN PENNSYLVANIA.

Though without a foot of seacoast Pennsylvania has maintained a front rank in the industry of ship-building since the earliest colonial times, and at the present time excels all the rest of the Union taken together, in the production of iron and steel steamships. A glance at the shipping register will show that more than nineteen-twentieths of the iron and steel steam tonnage afloat under the American flag on salt water, is the output of Delaware river ship-yards. To Pennsylvania belongs the credit not only of building nearly all the steamships themselves, but also of fabricating an equal percentage of the material, such as plates, shapes, forgings, castings, etc., used in their construction. Hence it is a leading industry of the state and a source alike of prosperity and pride.

As the growth and development of ship-building in Pennsylvania is now most prominently represented by the ship-yard of William Cramp & Sons, at once the greatest and the oldest in the United States and among the greatest in the world, we shall select their general method and practice as the basis of our paper on the present state of the art.

The first step toward the construction of a new ship is its "scheme." This is a general and comprehensive outline of the qualities and characteristics desired, which of course are determined by the work which the vessel is intended to perform. If designed for passenger traffic mainly, the chief requirements will be speed, safety and comfort of accommodation. In such a case the "scheme" would contemplate a long, sharp ship, with fine "lines" and elaborate fittings, and provided with high-powered machinery. If for freighting mainly, the "scheme" would involve a maximum of stowage and carrying capacity with engines of moderate power sufficient to drive the vessel at a comparatively low rate of speed with all possible economy of coal and other operating costs.

Having thus schemed the ship in view of her intended uses, the next step is the plan. This involves general drawings of the hull and machinery, with specifications sufficient to determine the quality of material and mode of construction. Upon the bases of the scheme and plan a contract is made between the owner and builder. Naturally the character of a contract and the effect of its stipulations varies according to the notions or predilections of the buyer; but experience has demonstrated that the most effective forms of contract are those which define the desired objects in the clearest and most concise general terms and leave the multiplicity of constructive details to be settled according to the common-sense rules of business as the work progresses. That is to say, the private ship owner states the features he desires in his



VESSEL

RTLY BUILT.

vessel and awards the contract not always to the lowest bidder, but to one in whom he has confidence, and with whose price he is satisfied and leaves the details to the builder. The government gets out elaborate plans and specifications and generally gives out the contract to the lowest bidder. Sometimes, however, the builder submits plans of his own as with the Cramp's in the case of the Vesuvius and the New York, and sometimes the lowest bidder is not given the vessel, as was the case when the Cramp's were awarded Cruiser No. 13 for work on behalf of the government. On the contrary the naval practice is to elaborate the terms of the contract and of the specifications to an extreme.

To exhibit the radical difference between the two methods of contracting, that is say, the ordinary business-like method for private account and that pursued by the government, we offer two forms of contract, one for a war vessel and one for a merchant steamship:

Contract for the construction of an Armored Cruiser of about 8,150 tons displacement. "Armored Cruiser, No. 2."

Contract, of two parts, made and concluded this 28th day of August, A. D. 1890, by and between The William Cramp and Sons Ship and Engine Building Company, a corporation created under the laws of the State of Pennsylvania, and doing business at Philadelphia, in said state, represented by the president of said corporation, party of the first part, and The United States, represented by the Secretary of the Navy, party of the second part.

Whereas, the act entitled "An act making appropriations for the naval service for the fiscal year ending June 30, 1889, and for other purposes," approved September 7, 1888, authorized the construction of one armed cruiser, to be constructed in accordance with certain provisions contained in the act, entitled "An act to increase the naval establishment," approved August 3, 1886, and to be, in all its parts, of domestic manufacture;

And whereas, after due advertisement, the proposal of the said party, of the first part for the construction of the hull and machinery of said vessel, including the fitting, fixing, placing, and securing of her armor, which vessel is, for the purpose of this contract, designated and known as "Armored Cruiser No. 2," has been duly accepted by the Secretary of the Navy;

And whereas, the plans, drawings, and specifications required by said acts have been duly provided, adopted, and approved, in accordance with the provisions of said act of September 7, 1888;

Now, therefore, this contract witnesseth, that, in consideration of the premises, and for and in consideration of the payments to be made as hereinafter provided for, the party of the first part, for itself and its successors and assigns, and its legal representatives, does hereby convenent and agree to and with the United States as follows, that is to say:

First. The party of the first part will, at its own risk and expense, construct, in accordance with the provisions of the acts of congress relating thereto, and in conformity with the aforesaid plans, drawings, and specifications, one armored cruiser of about eight thousand one hundred and fifty tons displacement, with fittings as specified, of the following principal dimensions:

	Feet.	Inches.
Length on mean load line, ...	380	$06\frac{1}{2}$
Extreme breadth (not including armor belt), ...	64	$02\frac{1}{4}$
Depth in hold from top of spar-deck beams to inner bottom,	41	03

such vessel to be constructed of steel, of domestic manufacture, and to be provided and fitted with machinery, engines, and boilers, also of domestic manufacture, com-

plete in all their parts, appurtenances, and spare parts, and in all respects as described in the annexed plans, drawings, and specifications, and in the aforesaid acts of congress, and will deliver the same at the Navy Yard, League Island, Pennsylvania, to such person or persons as the Secretary of the Navy may designate; it being, however, expressly understood and agreed that if any article or thing included in, or covered by, the plans, drawings, and specifications aforesaid shall be found, during the prosecution of the work under this contract, to be not produced or manufactured in the United States, and if, after reasonable effort, it shall be found impracticable to obtain the same as an article of domestic manufacture, then and in such case provision shall be made, by or with the approval of the Secretary of the Navy, for such alteration in the plans, drawings, and specifications, or for the adoption of such new or different device or plan as may be found necessary in order to carry out and complete this contract, subject, as to increase or diminished compensation by reason of such change, to the conditions applicable to changes as expressed in the second clause of this contract.

Second. The construction of the hull and machinery and the fittings of the vessel herein contracted for shall conform in all respects to and with the plans, drawings, and specifications above referred to, which plans, drawings and specifications are hereto annexed and shall be deemed and taken as forming part of this contract with the like operation and effect as if the same were incorporated herein. No omission in the plans, drawings, or specifications of any detail, object, or provision necessary to carry this contract into full and complete effect, in accordance with the object and intent of the acts of congress above referred to, shall operate to the disadvantage of the United States, but the same shall be satisfactorily supplied, performed, and observed by the party of the first part, and all claims for extra compensation by reason of, or for, or on account of, such extra performance, are hereby and in consideration of the premises expressly waived; and it is hereby further provided, and this contract is upon the express condition that the plans, drawings, and specifications aforesaid shall not be changed in any respect, when the cost of such change shall, in the execution of the work, exceed five hundred dollars, except upon the written order of the Secretary or Acting Secretary of the Navy; that, if changes are thus made, the actual cost thereof, and the damage, if any, caused thereby shall be ascertained, estimated, and determined by a board of naval officers, appointed by the Secretary of the Navy; that the party of the first part shall be bound by the determination of said board, or a majority thereof, as to the amount of increased or diminished compensation which the said party of the first part shall be entitled to receive, if any, in consequence of such change or changes, and that if all the changes authorized increase the cost of constructing the vessel, and premiums are earned hereunder by the party of the first part, such of said increased cost, as results from changes tending to increase the speed of the vessel, shall be deducted from such premiums in the final settlement under this contract.

Third. The party of the first part will, within ten months from the date of this contract, furnish all working drawings and templates necessary to show the dimensions and shape of each and every armor-plate required for use in the construction of the vessel herein contracted for, including those to be used in the construction of the turrets, barbettes, gun-shields, ammunition tubes, and in the protection of the guns and loading positions, and the position and sizes of the bolt holes therein—the spacing and dimensions of said bolt-holes to be in accordance with the specifications and subject to the approval of the Secretary of the Navy; it being expressly understood and agreed that the party of the first part shall furnish all the armor, armor-bolts, and their accessories, and all the labor and material required in the construction of the protective deck; that the party of the second part shall furnish all other armor, armor-bolts and their accessories to be used in the construction of the vessel, including such as may be required in the construction of the turrets, barbettes, gun-shields, ammunition tubes, and in the protection for the guns and loading positions, trim such armor-plates to the drawing or template sizes and shapes, within reasonable manufacturing limits, as set forth in the specifications, and drill

and tap all necessary holes therein, as shown by said approved drawings and templates, and deliver said armor, armor-bolts, and their accessories, at such reasonable place or places in the ship-yard of the party of the first part, as may be designated by the party of the first part, and within the times and in the order required to carry on the work properly; and that the party of the first part shall, at its own risk and expense, properly fit, fix, place, and secure all the armor to the vessel, including the turrets, barbettes, gun-shields, ammunition tubes, and protection for the guns, and loading positions, and furnish all other materials and labor required in the construction of said vessel and her machinery and fittings, as called for by the aforesaid plans and specifications.

Fourth. The materials and workmanship used and applied in the construction of the hull, machinery, and fittings of the vessel herein contracted for, and in the fitting, fixing, placing, and securing of her armor, in details and finish, shall be first class and of the very best quality, and shall, from the beginning to the end of the work, be subject to the inspection of the Secretary of the Navy; it being hereby expressly understood, covenanted, and agreed that the said Secretary may appoint suitable inspectors, to whom the party of the first part shall furnish such samples, and such information as to the quality thereof and the manner of using the same, as may be required, and also any assistance such inspectors may require in determining the weight and quality of steel and other metals, and of wood and other materials, either used or intended for use in the construction of said vessel, her machinery or fittings, fixing, or in the fitting, placing, and securing of her armor; and that the inspectors may, with the approval of the said Secretary, peremptorily reject any unfit material or forbid the use thereof. The inspector shall, at all times during the progress of the work, have full access thereto, and the party of the first part shall furnish them with full facilities for the inspection and superintendence of the same.

Fifth. The steel to be used in the construction of the hull (including the protective deck), machinery, and appurtenances of the vessel herein contracted for, except that used in the construction of her armor, shall conform to the "specifications for inspection of steel for use in the construction of the hulls and machinery of Armored Cruiser No. 2, and Cruiser (Protected) No. 6, for the United States Navy," approved by the Secretary of the Navy under date of May 10, 1890, which specifications are annexed to and form part a of this contract.

Sixth. The party of the first part will, at its own expense, prepare such plans or drawings as may be necessary during the progress of the work, and will submit the same to the Navy Department for approval before the material is ordered or the work commenced.

Seventh. The party of the first part, in consideration of the premises, hereby covenants and agrees to hold and save the United States harmless from and against all and every demand or demands of any nature or kind for or on account of the adoption of any plan, model, design, suggestion, or for or on account of the use of any patented invention, article, or appliance which has been or may be adopted or used in or about the construction of the hull, machinery, or fittings of said vessel, or any part thereof, or in fitting, fixing, placing, and securing her armor, under this contract, and to protect and discharge the government from all liability on account thereof, or on account of the use thereof, by proper releases from patentees or otherwise, and to the satisfaction of the Secretary of the Navy.

Eighth. The hull, machinery, and fittings of the vessel herein contracted for, and all materials and appliances provided for and used, or to be used in the construction thereof, shall be kept duly insured, which insurance shall be renewed and increased, from time to time, by and at the expense of the party of the first part, the loss, if any, to be stated in the policies, as payable to the United States; the insurance to be effected in such manner and in such companies as shall be approved by the Secretary of the Navy, and in an amount to be fixed, from time to time, by him, not exceeding the amount of advance payments made under this contract.

Ninth. The vessel herein contracted for, including her hull, machinery, and fittings, with all her armor fitted, fixed, placed, and secured as aforesaid, shall be com-

pleted and ready for delivery to the United States on or before the first day of January, eighteen hundred and ninety-three ; but the lien of the United States upon said hull, machinery, and fittings, respectively and collectively, and upon the materials on hand for use in the construction of the vessel, for all moneys advanced on account thereof, shall commence with the first payment, and shall thereupon attach to the work done and materials furnished, and shall, in like manner, attach, from time to time, as the work progresses, and as further payments are made, and shall continue until it shall have been properly discharged. In case the completion of the vessel, machinery, and fittings, including the fitting, fixing, placing, and securing of all her armor, as aforesaid, shall be delayed beyond the said date (January 1, 1893), deduction shall be made from the contract price of the vessel for each and every day (excepting Sundays) during the time of such delay, and until the vessel, machinery, and fittings, including the fitting, fixing, placing, and securing of all her armor, shall be completed and ready for delivery to the United States, as follows, viz : during the month of January, eighteen hundred and ninety-three, one hundred dollars per day; during the month of February, of said year, one hundred and fifty dollars per day ; and for each and every day (excepting Sundays) during which such completion shall be delayed beyond the first day of March, eighteen hundred and ninety-three, two hundred dollars per day—all such deductions from the contract price of the vessel to be made, from time to time, from any payment or payments falling due under this contract ; *provided, however*, that such delay shall not have been caused by the act of the party of the second part, or by fire or water, or by any strike or stand-out of workmen employed in the construction of the hull or machinery of said vessel, or by other circumstances beyond the control of the party of the first part ; but such circumstances shall not be deemed to include delays in obtaining materials when such delays arise from causes other than those herein specified ; *provided, further*, that in case of any such alleged delay, the party of the first part shall give immediate notice thereof in writing to the Secretary of the Navy.

In case any question shall arise, under this contract, concerning premiums over and above, or deductions from, the contract price of the vessel herein contracted for, such question, with all the facts relating thereto, shall be submitted to the Secretary of the Navy for consideration, and his decision thereon shall be conclusive and binding upon the parties to this contract.

All delays which the Secretary of the Navy shall find to be properly attributable to the Navy Department, or to its authorized officers or agents, or any or either of them, and to have been a delay operating upon the final completion of the vessel within the time specified therefor in this contract, shall entitle the party of the first part to a corresponding extension of the period herein prescribed for the completion of the vessel ; *provided, however*, that no delay, attributed by the party of the first part to the Navy Department, its officers, or agents, or the alleged cause or causes thereof, shall be considered by the Secretary of the Navy unless the party of the first part shall, at the time of the occurrence of such delay, notify him in writing of the facts and circumstances in each case, and of the extent to which the said party of the first part claims that the final completion of the vessel is thereby delayed.

Tenth. The party of the first part hereby further covenants and agrees that the vessel to be constructed under this contract shall be sufficiently strong to carry her armor, and the armament, equipment, coal, stores, and machinery prescribed by the Secretary of the Navy and indicated in the annexed plans and specifications ; that the total weight of said machinery, including engines, boilers, and appurtenances ; all fixtures in engine and fire rooms ; smoke-pipes ; distilling apparatus ; and water in boilers, condensers, pumps, pipes, and stern-tubes ;—but not including turret-machinery, stores, spare parts, heating apparatus, tools in work-shop, capstan, windlass, steering-gear, or winches—shall not exceed fifteen hundred and twenty (1,520) tons, this weight to be determined from the certified records of the actual weight of the parts of the machinery as they are sent on board the vessel to be connected up, except the weight of the contained water, which shall be calculated from the actual volumes in steaming condition, as shown on the certified drawings of the completed

machinery, the weight to be calculated for salt water, except for those parts where fresh water only is used; that if said total weight (1,520 tons) be exceeded, a deduction of five hundred dollars ($500) per ton shall be made from the contract price of the vessel for each ton of excess weight over that stipulated (1,520 tons), and that if said weight (1,520 tons) be exceeded by five per cent., a further deduction of ten thousand dollars ($10,000) shall be made from the contract price of the vessel—all such deductions to be made from any payment or payments falling due under this contract; and that when the vessel is completed and ready for delivery, as required by the plans and specifications, she shall be subjected to a trial trip, under conditions prescribed or approved by the Secretary of the Navy, to test the hull and fittings, the machinery, including engines, boilers, and appurtenances, and the speed of the vessel, and that such vessel shall be accepted only on fulfilment of, and subject to, the conditions and agreements hereinafter set forth :

(1.) That the working of the machinery in all its parts shall be to the satisfaction of the Secretary of the Navy.

(2.) The party of the first part hereby guarantees that the speed developed by said vessel upon said trial, under conditions prescribed by the Secretary of the Navy, shall be not less than an average of twenty (20) knots per hour, maintained successfully for four (4) consecutive hours, during which period the air pressure in the fire room shall not exceed two and one-half inches of water—the vessel to be weighted to a mean draught of twenty-four (24) feet—it being mutually understood, covenanted, and agreed that for every quarter knot of speed so exhibited and maintained above said guarantee (20 knots) the party of the first part shall receive a premium, over and above the contract price of the vessel, of fifty thousand dollars ($50,000), and that for every quarter knot that said vessel fails of reaching said guaranteed speed (20 knots) there shall be deducted, from the contract price, the sum of fifty thousand dollars ($50,000) ; *provided, however*, and it is hereby further expressly understood, covenanted, and agreed—the cost of said vessel, exclusive of armament, being limited by the aforesaid act of September 7, 1888, by reason of which limitation it is not in the power of the Secretary of the Navy to incur or create, on the part of the United States, in and about the construction of said vessel, pecuniary obligations which, in the aggregate, shall exceed such limit—that whenever the aggregate expenditures incurred and paid in the construction and equipment of said vessel, exclusive of armament, shall have reached the limit aforesaid, then and in such case any and all premiums which may have been earned by the party of the first part under the provisions of this contract, but which, when such limit is reached, shall remain unpaid, shall be subject to the approval and action of Congress, and that in no event shall any obligation be deemed to have been created, nor shall any claim exist, for or on account of such unpaid premiums, until such claims shall have been approved by Congress.

(3.) That said vessel, including hull, fittings, machinery, engines, boilers, and appurtenances, and the fitting, fixing, placing, and securing of her armor, and all other work required under this contract, shall be found to be strong and well built and well performed, and in strict conformity with the contract, plans, drawings, and specifications, and shall be approved by the Secretary of the Navy ; *provided*, that if, at and upon said trial, there shall be any failure in the vessel, including hull, fittings, machinery, engines, boilers, and appurtenances, and the fitting, fixing, placing, and securing of her armor, to meet fully the requirements of this contract, the party of the first part shall be entitled to make further trials, sufficient in number to reasonably demonstrate the capabilities of the vessel ; *and provided also*, that the number of trials shall be determined and limited by the Secretary of the Navy, and that the expenses of a successful trial shall be paid by the party of the second part, but that any unsuccessful trial of the vessel or her machinery prior to her preliminary or conditional acceptance, shall be at the expense of the party of the first part.

Eleventh. If, at and upon the trial trip before mentioned, the foregoing require-

ments and conditions relating to the hull, fittings, and machinery of said vessel, and to the fitting, fixing, placing, and securing of her armor shall be fulfilled, and if the speed guaranteed as aforesaid shall be developed and maintained as aforesaid, then and in such case the vessel shall be preliminarily accepted, and payment of the last three instalments of the contract price of the vessel, and of all reservations shall be made, subject, however, to a special reserve of fifty thousand dollars ($50,000) from and out of the reservations hereinafter provided for; but if the speed developed and maintained by said vessel, during such trial, shall fall below the speed guaranteed as aforesaid, she shall be conditionally accepted, subject to deductions, as aforesaid, from the contract price of the vessel on account of her failure to reach the speed guaranteed as aforesaid; *provided however*, that all the other requirements and conditions of this contract, relating to the hull, fittings, and machinery of said vessel, and to the fitting, fixing, placing, and securing of her armor shall have been fulfilled; and that, in case of such conditional acceptance, the twenty-eighth, twenty-ninth, and thirtieth instalments of the contract price of the vessel and the reservations on payments under this contract, shall constitute a reserve fund which shall be applicable to or towards the satisfaction of such deductions from the contract price, and shall be retained by the party of the second part for that purpose.

In case of a "preliminary" acceptance of said vessel the said "special reserve" of fifty thousand dollars ($50,000), or in case of a "conditional" aeceptance of said vessel, the said "reserve fund," or so much thereof as may, in the judgment of the Secretary of the Navy, be necessary, shall be held until the vessel has been finally tried, after being fully equipped, armed (or weighted correspondingly), and in all respects complete and ready for sea, under conditions prescribed or approved by the Secretary of the Navy; *provided*, that such final trial shall take place within six months from and after the date of the "preliminary" or the "conditional" acceptance of the vessel.

If, at and upon such final trial, or at any time within six months after either a "preliminary" or a "conditional" aeceptance of said vessel, such final trial not having taken place, any weakness or defect in the hull or fittings, or defective workmanship in the fitting, fixing, placing, and securing of the armor shall appear, or the machinery, or any part or parts thereof, shall be found to be defective in any respect, or there shall be any failure, breaking down, or deterioration, other than that due to fair wear and tear of any part or parts of the machinery, engines, boilers, or appurtenances, the same shall be corrected and repaired, to the satisfaction of the Secretary of the Navy, at the expense of the party of the first part, and the party of the first part may, if it so desires, have an engineer of its own selection present in the engine-room of said vessel at any time or times during said period, who shall have full opportunity to observe and inspect the working of the machinery in all its parts, but without any directing or controlling power over the same, and in case such engineer shall be a civilian, his compensation shall be paid by the party of the first part.

If the vessel be not in readiness for such final trial within six months from the date of her "preliminary" or "conditional" aceeptance, through no fault or delay on the part of the party of the first part, and no weakness or defects in the hull or fittings or in the machinery, including engines, boilers, and appurtenances, or defective workmanship in the fitting, fixing, placing, and securing of the armor, shall have appeared, then the vessel shall be finally accepted, and the said "special reserve," or the surplus, if any, of the said "reserve fund," paid, subject, however, to deduction on account of any reductions that may be made in the contract price of the vessel under the provisions of this contract.

Twelfth. The Department, having adopted, as foundation for this contract, plans and specifications of a vessel which it has reason to think would, if properly carried out, result in the production of a speed of not less than twenty (20) knots per hour, assumes no responsibility with reference thereto, and will consider any changes suggested by the party of the first part, either as to hull or machinery, and, as the responsibility is with the party of the first part, will feel it to be its duty to deal liberally

with any proposed changes, so long as the size, strength, and character of the vessel shall remain substantially the same; changes in plans or specifications involving increased or decreased expense to be dealt with as provided for in the second clause of this contract.

Thirteenth. It is further mutually understood, covenanted, and agreed, that, in case of the failure or omission of the party of the first part, at any stage of the work prior to final completion, from any cause or causes other than those specified in the ninth clause of this contract, to go forward with the work and make satisfactory progress towards its completion within the prescribed period, it shall be optional with the Secretary of the Navy to declare this contract forfeited. The party of the first part shall thereupon, and on notice thereof, in writing, be, and the said party of the first part does hereby, in consideration of the premises, for itself and its successors and assigns, and its legal representatives, acknowledge itself to be justly indebted to the United States, as for liquidated and ascertained damages, in a sum equal to the aggregate amount of all advance payments theretofore made to it for or on account of work done under this contract, and does further, as aforesaid, covenant and agree to refund the same on demand, or within sixty days thereafter, and that the United States shall and may hold, as collateral security for such refund, said vessel, machinery, materials, and fittings, or so much thereof as shall then have been constructed or furnished, or as shall be on hand for the purposes of construction. The Secretary of the Navy shall thereupon cause to be taken and filed a full and complete statement and inventory of all work done or commenced in, upon, or about the hull, machinery and fittings of said vessel, and in the fitting, fixing, placing, and securing of her armor, and of all materials on hand applicable thereto, the property of the party of the first part, and shall cause the same to be duly valued by a board, consisting of not less than five persons, qualified by knowledge and experience for the discharge of their duties, to be appointed by the Secretary of the Navy, which board shall proceed without unnecessary delay to examine such work and materials and ascertain and declare the fair market value thereof, including a reasonable and customary margin of profit upon so much of the work as shall have been, at the time such forfeiture is declared, satisfactorily performed; and upon such examination the party of the first part may attend, and, if it so desires, by counsel, and submit such evidence as the board may deem proper.

Fourteenth. Upon receipt of the report and finding of said board, and upon his approval thereof, the Secretary of the Navy may, in his discretion, proceed to complete said vessel, machinery, and fittings, and all other work required under this contract, in accordance with the contract, plans, drawings, and specifications, using for that purpose all suitable materials on hand and included in the inventory aforesaid; and the title to said vessel, machinery, and fittings, or so much thereof as shall have been completed, and to all such materials shall forthwith vest in the United States; and the party of the first part does hereby, for itself and its successors and assigns, and its legal representatives, covenant and agree, to and with the United States, that, on receiving notice of the intention of the Secretary of the Navy to proceed to the completion of the work, it will surrender said vessel, machinery, and fittings, and all materials on hand, together with the use of the yard or "plant," and all machinery, tools, and appliances appertaining thereto and theretofore used or necessarily to be used in and about the completion of the work.

Fifteenth. In case the Secretary of the Navy shall proceed, under the foregoing clause, to complete the work, such procedure shall be without unnecessary delay, and shall be at the risk and expense of the party of the first part, which party shall be chargeable with any increase in the cost of materials or labor incurred by reason of its failure to perform this contract. Upon the final settlement of the liability of the party of the first part an account shall be stated substantially as follows:

The party of the first part shall be charged—

1. With all advance payments.

2. With the extra cost, if any, of materials and labor, and all other extra expenses, if any, over and above the contract price, incurred in the completion of the work.

The party of the first part shall then be credited with the value of the work done up to the time of suspension, and of the materials on hand, as ascertained by the board and approved by the Secretary of the Navy, under the provisions of the thirteenth clause of this contract, and with such advance payments, if any, as may have been refunded. If a balance shall thereupon appear in favor of the party of the first part, the same shall be paid to and accepted by the said party of the first part in full discharge of all claims under this contract; but if a balance shall appear in favor of the United States, the party of the first part hereby covenants and agrees as aforesaid to pay and discharge the same on demand.

Sixteenth. It is mutually understood, covenanted, and agreed, by and between the respective parties hereto, that it shall not, under any circumstances, be obligatory upon the party of the second part to accept or pay for the vessel, or any part thereof, to be constructed under this contract, unless she shall have been completed in strict conformity with this contract, and in accordance with the provisions of the acts of Congress relating thereto, and that this qualification shall be deemed and taken as applicable and applying to each and every clause, covenant and condition, express or implied, in this contract contained.

Seventeenth. It is mutually understood, covenanted, and agreed, by and between the respective parties hereto, that this contract shall not, nor shall any interest therein, be transferred by the party of the first part to any other person or persons.

Eighteenth. It is hereby mutually and expressly covenanted and agreed, and this contract is upon the express condition, that no member of or delegate to Congress, officer of the navy, or any person holding any office or appointment under the navy department, shall be admitted to any share or part of this contract, or to any benefit to arise therefrom; but this stipulation, so far as it relates to members of or delegates to Congress, shall not be construed to extend to this contract, it being made with an incorporated company.

Nineteenth. The United States, in consideration of the premises, do hereby contract, promise, and engage, to and with the party of the first part as follows:

1. The contract price to be paid for the vessel, machinery, and fittings to be constructed and furnished in accordance with this contract, including the fitting, fixing, placing and securing of her armor, shall be two million nine hundred and eighty-five thousand dollars ($2,985,000).

2. Payments shall be made by the United States in thirty equal instalments, as the work progresses, with a reservation of ten per cent. from each instalment.

3. No payment shall be made except upon bills, in triplicate, certified by the inspectors, in such manner as shall be directed by the Secretary of the Navy, whose final approval of all bills thus certified shall be necessary before payment thereof.

4. All warrants for payments under this contract shall be made payable to the party of the first part or its order.

5. The payment of the last three instalments shall not be made except as provided for in the eleventh clause hereof.

6. When all the conditions, covenants, and provisions of this contract shall have been performed and fulfilled by and on the part of the party of the first part, said party of the first part shall be entitled, within ten days after the filing and acceptance of its claim, to receive the said "special reserve," or the surplus, if any, of the said "reserve fund," or so much of either as it may be entitled to, on the execution of a final release to the United States, in such form as shall be approved by the Secretary of the Navy, of all claims of any kind or description under or by virtue of this contract.

Twentieth. If any doubts or disputes arise as to the meaning of anything in the plans, drawings, or specifications, or if any discrepancy appear between said plans, drawings, or specifications and this contract, the matter shall be at once referred to the Secretary of the Navy for determination, and the party of the first part hereby binds itself and its successors and assigns, and its legal representatives, to abide by his decision in the premises.

In witness whereof, the respective parties have hereunto set their hands and seals the day and year first above written.

Signed and sealed in the presence of—

THE WM. CRAMP & SONS' SHIP AND ENGINE BUILDING COMPANY.
By CHAS. H. CRAMP, [L. S.]
President.

Attest:
HENRY W. CRAMP,
Secretary.

THE UNITED STATES
By B. F. TRACY, [L. S.]
as *Secretary of the Navy.*

WM. B. REMEY, *Judge Advocate General,*
as to B. F. TRACY, *Secretary of the Navy.*

Steamer "Venezuela" Red D. Line.

Memorandum of agreement, made this fifth day of December, 1888, between the William Cramp and Sons' Ship and Engine Building Company, of Philadelphia, party of the first part, and the firm of Boulton, Bliss & Dallett, of New York, party of the second part.

The party of the first part agrees to build for the party of the second part an iron steamer of the following dimensions:

Length from inside of stem to inside of rudder post on main deck, ... 310 feet.
Beam, ... 40 feet.
Hold, ... 21 feet from top of floors.

The hull to be built according to the rules of British Lloyds, highest class.

The joiner work, passenger accommodations, hatches, etc., from plans to be approved by the party of the second part.

Boilers to be four in number having 200 square feet grate surface; also an auxiliary boiler for hoisting engine and heaters; and to have a working pressure of 160 pounds of steam. Machinery to be triple expansion; diameters of cylinders 25, 41 and 67 inches; stroke of pistons, 42 inches; capable of developing 1,800 indicated horse power.

The boilers and engine to be constructed under Lloyd's rules.

The party of the first part also agrees to furnish this vessel complete, according to the requirements of the United States laws, for the carrying of passengers and freight, and fitted ready for sea, except cabin, steward's and kitchen outfits and nautical instruments.

The party of the first part also guarantees the machinery and boilers for good workmanship and materials for six months.

Any government assistance, such as bounty, drawback or other form that may arise, shall be to the benefit of the party of the second part.

It is understood and agreed that the title and ownership of this steamer vests absolutely and to all intents and purposes in the said Boulton, Bliss & Dallett from and after the laying of the keel.

For the faithful performance of the above the party of the second part agrees to pay to the party of the first part the sum of . . . . . dollars in the following manner:

Twenty-five thousand dollars on signing contract; $25,000 when keel is laid; $25,000 when frame bars are in the yard; $62,500 when frame is erected, $62,500 when plated; $62,500 when launched; balance when completed.

The steamer to be inspected, finished, and, after making a trial trip, delivered at Philadelphia.

(Signed) THE WILLIAM. CRAMP & SONS SHIP AND ENGINE BUILDING CO.
(Signed) BOULTON, BLISS & DALLETT.

But as the form or method of contracting does not materially affect the processes of construction in the mechanical sense it is not pertinent to discuss them here; except to say that experience has not demonstrated the merit of superior economy in the government system as compared with that commonly pursued in work for private account.

Having settled upon what is wanted, the ship-builder proceeds to prepare the drawings and specifications of a vessel to fulfil the stipulated requirements. The plans prepared are:

1. The lines, which are the projections on three plans of sections through the vessel, and which show the dimensions and shape of its outer surface before the plating is put on.

2. The sections, consisting af a plan of the midship section and any other transverse sections of the vessel that are necessary to show the method of putting together, and the sizes of the various parts.

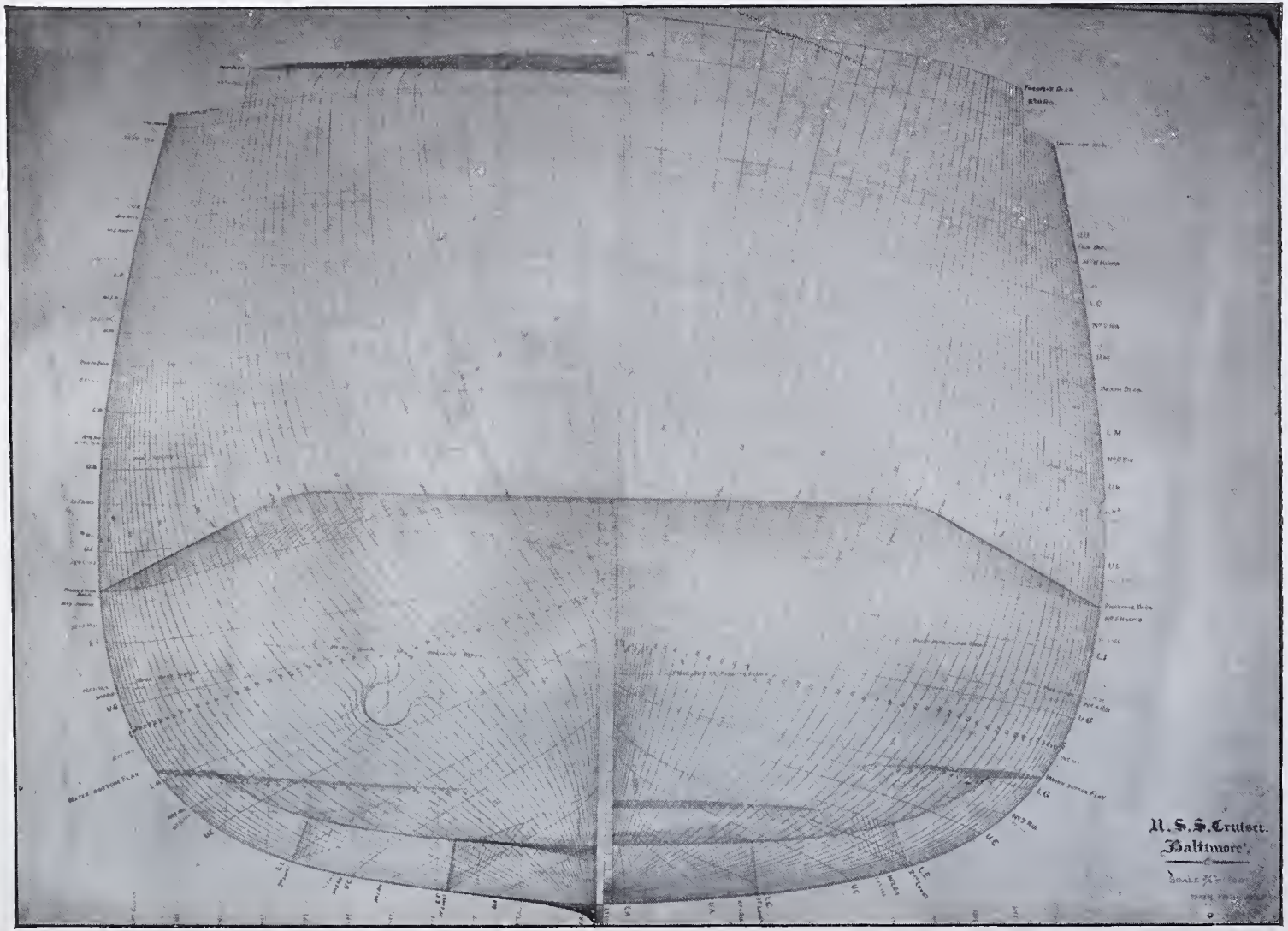
3. The structural plans showing a longitudinal vertical section through the ship with the positions of decks, etc., and plans of the various decks, holds and platforms.

4. Joiner plans showing the joiner work in the various compartments.

Preliminaries having been thus settled the plans and specifications approved, and the contract put in force, the first step towards actual construction is that of "laying down the lines of the ship in the mould loft." The "mold loft" is a large floor affording room for expansion of the lines and body plans of the ship to natural size. The "lines" are sections of the hull cut longitudinally through horizontal planes for what are termed the "water lines," through vertical planes for what are termed the "buttock lines" and through diagonal planes on a pitch of forty-five degrees from the middle line vertical plane of the ship for what are termed the "diagonals"; and all these lines must coincide in what is termed "fairness" before the model is considered perfect.

The body plan is a projection of the principal frames or cross sections of the ship in one plane, of which the midship frame or 'dead flat" is the basis and all the other frames recede from it in regular order to the stem forward and to the sternpost aft. Here again the points of intersection of the "lines" and the "frames" must be coincident and that fact must be determined by the nicest measurements.

Instances have occured where, through lack of accuracy in these adjustments ships were built with unequal sides. One of them was the old twenty-four gun corvette John Adams, built in New England towards the end of the last century. She was well built and staunch so far as workmanship and material were concerned, but in consequence of the slovenly manner in which her lines were laid down and checked off, she had about six inches more beam on one side of the middle line of the keel than on the other, which made her so "lop-sided" that her ballast had to be unequally stowed, in order to trim her on an even keel and she would sail much faster and hold way much closer to the wind on one tack than on the other.



THE BODY PLAN OF THE BALTIMORE AS LAID DOWN IN THE MOULD LOFT.

However such errors are practically impossible now in consequence of improved methods and the multiplication of devices for discovering and checking error.

Simultaneously with this work in the mold-loft the force in the draughting room is busy drawing and tracing similar lines and body plans on paper to a scale of one-quarter or one-half inch to the foot of actual dimensions obtained from the loft, and these are embodied in a wooden model usually representing a "half-breadth" or one side of the proposed ship in miniature, and on the surface of this model the sizes of the plates are "laid off" by lines showing the edges and butts of the plates and also the outlines of the deck or stringer plates. When this model is completed and each plate marked with a letter for the strake to which it belongs—as for example, strake A, strake D, etc,—and a number for the plate itself, the numbers running from forward aft. This model now forms the basis of the expansion plans of the framing and plating, from which the dimension of each frame and each plate are determined and this calculation in turn forms the basis of what is called the "schedules of material," which are dimensional descriptive catalogues embracing each individual piece of iron or steel entering into the construction of the vessel.

These schedules are now forwarded to the iron or steel makers who proceed to manufacture the plates and shapes in accordance with their requirements. Plates are usually ordered about an inch longer than the finished size and sometimes, though not always, half an inch wider:

THE WM. CRAMP & SONS SHIP AND ENGINE BUILDING CO.,
PHILADELPHIA, *April 27, 1891.*

Mr. J. OGDEN HOFFMAN:

Please send the following: Steel plates for hull No. 270 (Battle-ship No. 1).

Number of plates.	Length.	Width.		Taper.	Pounds per foot.	Quality.	Hull number.	MARKED.
2	134″	$38\frac{3}{4}$″	$38\frac{1}{4}$″	One edge.	25	Steel.	270	No. 4 E Str. Outside pltg.
2	31″	.	$36\frac{1}{2}$″	. . . . .	15	"	270	Floor No. 47. A.
2	200″	45″	38′	One side.	14	"	270	No. 1 Inner Bottom E.

THE WM. CRAMP & SONS SHIP AND ENGINE BUILDING CO.,
PHILADELPHIA, *April 11, 1891.*

PHŒNIX IRON CO.:

Please send the following: Steel shapes for hull No. 270 (Battle-ship No. 1).

Number of bars.	Length.	Size.	Pounds per foot.	Shape.	Quality.	Hull number.	MARKED.
2	47′ 3″	. . 3½″x3 ′	8	L	Steel.	270	No. 48 Frame Keel & shelf.
2	30′ 7″	6″x3½″x3½″	15	Z	Steel.	270	No. 80 Frame Keel & Prot dk
2	17′ 1″	6 ′x3½″x3½″	15	Z	Steel.	270	No. 10 Frame Prot to Main dk
1	56′ 1″	9″x3½″	24	T	Steel.	270	No. 26 Prot dk. Beam.

As intimated at the outset, most of the material used in Pennsylvania ship-yards—or in any others in the country for that matter—is made in Pennsylvania mills.

The tests demanded for ships plates and shapes for the merchant service are not so elaborate as are required by our Navy Department. Lloyd's Register requires for merchant vessels that the quality of the iron shall be as follows:

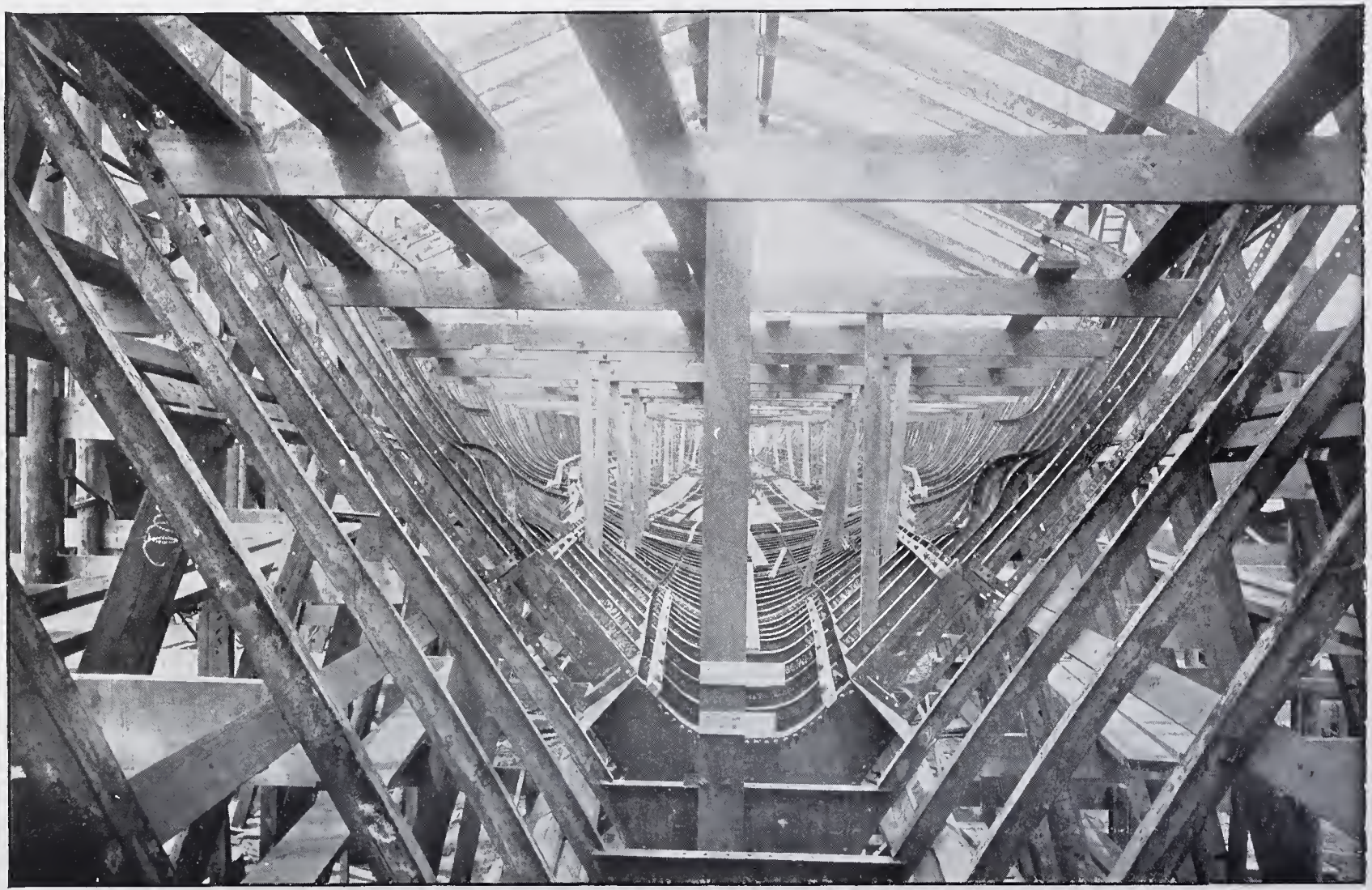
"The whole of the iron to be of good malleable quality, capable of withstanding a tensile strain of twenty tons per square inch width, and eighteen tons across the grain, and to be subjected to tests at the discretion of the surveyors. Brittle or inferior material to be rejected."

In the case of steel vessels Lloyd's Register requires that strips cut lengthwise or crosswise of the plates, also angle and bulb steel shall have an ultimate tensile strength of not less than twenty-eight tons nor more than thirty-two tons per square inch of cross section, with an elongation equal to at least sixteen per cent. on a length of eight inches before fracture. Steel angles for frames and bulb steel for beams may have a maximum tensile strength of thirty-three tons per square inch of section, providing they be capable of standing the bending tests and of being efficiently welded. Strips cut from the plate, angle or bulb steel to be heated to a cherry red and cooled in water of 82° Fahrenheit must stand bending double around a curve of which the diameter is not more than three times the thickness of the plates tested.

The steel used in the men-of-war building for the United States navy is tested as follows:

Specifications for inspection of steel for use in the construction of the hulls and machinery of Coast-line Battle-ships Nos. 1, 2, and 3, Cruiser (Protected) No. 12, and Harbor-Defense Ram for the United States Navy—General Instructions.

1. All steel material must be of domestic manufacture and of uniform quality throughout the mass of each object, and free from all defects.



FRAME OF A STEEL STEAMER.

2. All material, for which tests are herein prescribed, must be inspected and tested at the place of manufacture by a naval inspector of material, and must be passed by him, subject to restrictions hereinafter mentioned, before acceptance by the Navy Department.

3. Each object made from the above material must be clearly and indelibly marked in three places and with three separate stamps; First, the private stamp of the inspector; second, the stamp of the manufacturer; and third, with the regulation government stamp—the latter must not be stamped on any of the above material until the same has been inspected, weighed, and passed ready for shipment.

4. In case of small articles passed and packed in bulk, the above-mentioned stamps shall be applied to the boxing or packing material of the object.

5. No steel material will be received at the building yard for incorporation into these vessels except it bears, either upon its surface or that of its packing, all these stamps as evidence that it has passed the required government inspection.

6. Material may be rejected at the building yard or works for surface or other defects, either existing on arrival, or developed in working, though it bear the above-mentioned stamps.

7. The acceptance of material under any test hereinafter provided for will not relieve the contractors from the necessity of making good any material that fails in working, or which may be rejected by the inspector at the building yard or works.

8. Test pieces, after being cut from the plate or object to be tested, must not be subjected to any treatment or process, except machining to size, and such pieces shall not cut be off until the plate or object shall have received all treatment.

9. Tensile specimens must be uniform in cross-section between measuring points. Specimens of blooms, layers of protective deck-plating of a tensile of 75,000 pounds or over, other armor, and forgings to have a length of two (2) inches between measuring points and a diameter of one-half ($\frac{1}{2}$) inch. Other tensile specimens must be eight (8) inches between measuring points, except specimens of rounds, not including rivets, which may be full-sized bars, eight diameters in length between measuring points.

10. Full-sized rivet bars may be used as specimens, but other 8-inch specimens must have a sectional area, when practicable, of not less than .5 nor more than .8 of one (1) square inch, except specimens of plates .8 of an inch in thickness and over, in which case the width may be equal to the thickness, so that a tensile test piece shall have a sectional area equal to the square of the thickness of the plate from which it was cut.

11. Each tensile test piece must be subjected to a direct tensile stress until it breaks, and in a machine of approved character.

12. The tensile strength herein specified means the ultimate tensile strength per square inch of original cross-section, and the elongation referred to is that obtained after fracture.

13. Specimens which, in breaking, show flaws, may be thrown out and others taken under the direction of the steel inspection board.

14. A new specimen may be selected and tested to replace one which shows defective machining or one which breaks outside measuring points, provided such break is not due to defective metal.

15. The weight of all material must be carefully obtained by the inspector before shipment. Invoices giving the location marks, dimensions, and weights for each shipment of plates, shapes, forgings, castings, or rivets intended for the vessel, must be furnished by the manufacturer to the superintending inspector at the building yard or works where the work of construction is in progress. Such invoices to have the weights extended for each plate, forging or casting, and each lot of similar shapes or rivets of like dimensions.

16. Previous to acceptance manufacturers will furnish a chemical analysis of each heat, made in the most approved manner.

17. A list of all ingots, and weights of same, made from each heat, will be supplied to the inspector, and the ingots must be so marked and arranged that he can identify

them. In case there is doubt as to the identity with a heat of a plate, forging, or other object, it must conform with the chemical and other physical requirements herein laid down for its kind.

18. The discarding of inferior portions of ingots, the fabrication, treatment, and manufacture generally, must be so conducted as to insure uniformity in the quality of the metal of each heat, lot, or object submitted for inspection. All annealing must be done at a sufficient heat and one which will not injure the material. The whole of an object must be annealed at the same time, and at such a temperature as will insure, as far as possible, uniform physical properties. Manufacturers will state the amount of discard from the top and bottom of ingots, when required by the inspector; also the number and weight of the heads and the risers.

19. Such additional tests may be made by the inspectors, from time to time, as they may deem necessary, to detect lack of uniformity in the material.

20. Tests may be prescribed by the steel inspection board for the inspection of steel material for which tests are not herein specified.

21. The department shall have the right to keep inspectors at the works, who will have free access to all parts thereof, and who will be permitted to examine the raw material and to witness the processes of manufacture.

22. Inspectors will be supplied, free, with suitable office-room by each firm manufacturing material for government use, and such plain office furniture as may be necessary to the proper transaction of their business as agents of the government.

23. The chiefs of bureaus concerned are at liberty at any time to ask for any additional inspection of the processes of manufacture and, when so ordered by the department, all the necessary facilities shall be furnished by the contractors.

24. Contractors will furnish the steel inspection board with copies of their orders to manufacturers for material requiring inspection. Manufacturers must exhibit to inspectors the schedules of material that they receive from contractors, and must give the inspectors all the information that the latter may call for, in order to the proper inspection of the material on said schedule under these specifications.

SHIP PLATES AND SHAPES.

25. *Kind of Material.*—Plates and shapes must be of steel, made by the open-hearth process, and must not show more than .06 of one per centum of phosphorus nor more than .04 of one per centum of sulphur, and must be of best composition in other respects.

26. *Treatment.*—At the option of the manufacturer, the material may be annealed.

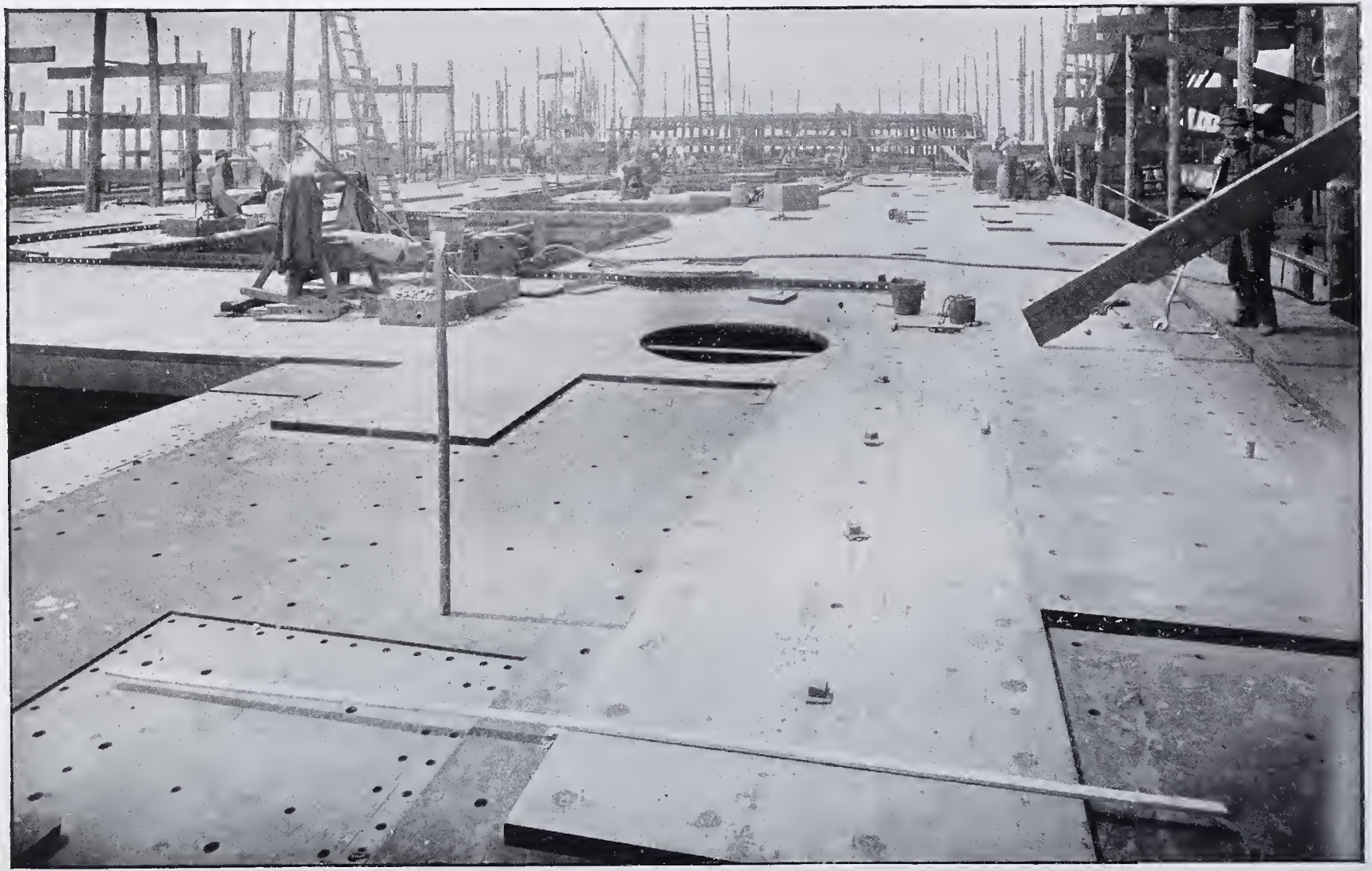
27. *Tensile Tests.*—Plates and shapes may be tested by heats as follows:

Four test pieces, each from a different plate or object, shall be made and tested for each heat as finished at the rolls.

Such test pieces shall show a tensile strength of at least 60,000 pounds and an elongation in eight inches of at least twenty-five per centum. If but one of such pieces fall below 60,000 pounds, but not below 58,000 pounds, in tensile strength, or below twenty-five per centum, but not below twenty-three per centum, in elongation, showing either or both of such deficiencies, and the average result of the tests of the four pieces show a tensile strength above 60,000 pounds and an elongation above twenty-five per centum, the heat shall be accepted, if the other conditions of test are fulfilled. But if two such pieces fall below a tensile strength of 60,000 pounds or an elongation of twenty-five per centum, or if each of the two pieces fail in either characteristic, the heat shall be rejected.

28. When heats are rolled into plates of varying thicknesses the test pieces shall be taken from plates of not less than three-tenths of an inch in thickness, and when practicable, the test plates are to be of the same thickness as the plates into which the heat is to be rolled. Test pieces for light plates, ten pounds and under, shall not be more than three-tenths of an inch in thickness.

29. The tensile tests of any single plate or shape may be regarded as satisfactory, provided it shows a tensile strength of at least 60,000 pounds and an elongation of at least-twentyfive per centum.



ARMORED DECK OF A U. S. NAVAL STEAMER.

30. *Cold-bending Test.*—Two pieces to be cut from each heat as finished at the rolls for cold-bending test, and they must bend over flat on themselves without sign of fracture. If one of these specimens fail, an additional piece may be taken, but if this one fail, each plate rolled from the heat must pass the cold-bending test or be rejected. The number of pieces under the cold-bending test may be increased if the inspector has reason to suspect overheating or cold rolling.

31. *Quenching Test.*—Two pieces shall be cut from each heat, as finished at the rolls, for quenching tests, and after heating to a dark cherry-red, plunged into water at a temperature of 82° F. Thus prepared, it must be possible to bend the pieces so that they shall be doubled round a curve of which the diameter is not more than one and a half times the thickness of the piece tested, without showing any cracks. The ends of the pieces must be parallel after bending. Quenching and cold-bending pieces must not have their sheared or planed sides rounded off, the only treatment permitted being taking off the sharpness of the edges with a fine file.

32. *Inspection for Surface and Other Defects.*—Plates and shapes must be free from slag, foreign substances, brittleness, hard spots, laminations, sand or scale marks, scabs, snakes, pits, and defects generally. Shapes must also be free from defective sections, shaded backs, grooved fillets, imperfect edges, etc.

33. *Opening and Closing Tests.*—Angles, beams, bulb-bars, T and Z bars, etc., are to be subjected to the following additional tests: A piece cut from one bar in twenty, as rolled from the same heat, to be opened out flat while cold; a piece cut from another bar in the same lot shall be closed down on itself until the two sides touch in both cases without showing cracks or flaws.

34. *Drop Tests.*—From every heat rolled into shapes, two bars, not less than 6 feet long, will be tested to destruction by means of a falling weight. Should this test give evidence of brittleness, the inspector will cause other tests to be made, and results of same shall be referred to the steel inspection board for action.

35. *Weighing.*—Plates of $12\frac{1}{2}$ pounds per square foot and less, and strips and bars of 6 pounds per linear foot and less, may be accepted if the weights vary between 3 per centum above and 5 per centum below the specified weights.

36. All other plates and shapes may be accepted if the weights vary between the specified weights and five per centum below them.

37. Contractors, in their orders to manufacturers, must state the weight per square foot for plates, and per linear foot for shapes.

PROTECTIVE DECK PLATING FOR CRUISER (PROTECTED) NO. 12.

38. The bottom layer of plating will be inspected as ship plates.* The middle layer will be inspected as follows:

39. *Tensile Tests.*—Four test pieces, each, if practicable, from a different plate shall be taken from each heat as finished. Such pieces shall show a tensile strength of at least 80,000 pounds, and an elongation in 2 inches of at least 18 per centum.

40. The tensile test of any single plate may be regarded as satisfactory, provided it shows a tensile strength of at least 80,000 pounds, and an elongation in 2 inches of at least 18 per centum.

41. The tensile test of any single plate having a tensile strength of at least 75,000 pounds will be regarded as satisfactory, provided the elongation is augmented by .5 of 1 per centum for every 1,000 pounds less than 80,000 pounds in such a manner that at 75,000 pounds the corresponding elongation shall be at least $20\frac{1}{2}$ per centum.

42. *Top Layer.*—Four test pieces, each, if practicable, from a different plate, shall be taken from each heat as finished. Such pieces shall show a tensile strength of at least 90,000 pounds, and an elongation in 2 inches of at least 15 per centum.

43. The tensile test of any single plate may be regarded as satisfactory, provided it shows a tensile strength of at least 85,000 pounds, and an elongation in 2 inches of at least 18 per centum.

44. The tensile strength may rise above 90,000 pounds, but the elongation must in no case be less than 15 per centum.

*The quenching test to be omitted

PROTECTIVE DECK PLATING FOR COAST-LINE BATTLE-SHIPS.

45. The two lower layers of plating will be inspected as ship plates. The top layer will be inspected as follows:

46. *Tensile Tests.*—Four test pieces, each, if practicable, from a different plate, shall be taken from each heat as finished. Such pieces shall show a tensile strength of at least 90,000 pounds, and an elongation in 2 inches of at least 15 per centum.

47. The tensile test of any single plate may be regarded as satisfactory, provided it shows a tensile strength of at least 85,000 pounds, and an elongation in 2 inches of at least 18 per centum.

48. The tensile strength may rise above 90,000 pounds, but the elongation must in no case be less than 15 per centum.

49. The "kind of material," weighing and inspection for surface and other defects will be the same as for ship plates; slight pitting or roughness will not be regarded. To detect brittleness, drop tests will be made on specimens of one square inch cross-section, and 8 inches between supports, two test pieces being taken from each heat. In case these tests show brittleness additional tests will be made, and the results referred to the steel inspection board for its action.

BOILER PLATES.

50. *Kind of Material.*—Steel for boiler plates must be made by the open-hearth process, and must not show more than .035 of one per centum of phosphorus, nor more than .04 of one per centum of sulphur, and must be of the best composition in other respects.

51. One tensile test piece and one bending piece shall be cut from each plate as rolled for boilers, either longitudinally or transversely, as directed by the inspector.

52. *Tensile Test of Shell Plates.*—Transverse specimens must show a tensile strength between 58,000 and 67,000 pounds, with an elongation of at least 22 per centum in eight (8) inches. Longitudinal specimens must show a tensile strength between 58,000 and 67,000 pounds, with an elongation of at least 25 per centum in eight (8) inches. The elastic limit must be at least 32,000 pounds per square inch. A variation in elongation of 2 per centum below that specified will be permitted in the case of additional tests made by the inspector to detect lack of uniformity.

53. *Tensile Tests of Furnace and Flange Plates.*—Test pieces must show a tensile strength between 50,000 and 58,000 pounds, with an elongation of 26 per centum in eight (8) inches, either longitudinally or transversely.

54. *Cold-bending Test.*—One piece to be cut from each shell plate as finished at the rolls for cold-bending test, which must bend over flat on itself without sign of fracture.

55. *Quenching Test.*—One piece shall be cut from each furnace or flange plate as finished at the rolls for quenching test, and after heating to a dark cherry-red, plunged into water at a temperature of 82° F. Thus prepared, it must be possible to bend the piece so that it shall be doubled round a curve of which the diameter is not more than one and a half ($1\frac{1}{2}$) times the thickness of the piece tested without showing any cracks. The ends of the pieces must be parallel after bending. Quenching and cold-bending pieces must not have their sheared or planed sides rounded off, the only treatment permitted being taking off the sharpness of the edges with a fine file.

56. *Inspection for Surface and Other Defects.*—Plates must be free from slag, foreign substance, brittleness, laminations, hard spots, sand or scale marks, scabs, snakes, pits, and defects generally.

57. *Shearing.*—Boiler plates $\frac{13}{16}$ of an inch thick and over shall not be sheared closer to finished dimensions than once the thickness of plate along each end and one-half the thickness of the plate along each side. This allowance will be made by the contractor on his order, and the manufacturer will shear to ordered dimensions.

58. *Weight and Gauge.*—Contractors will enter on their orders to manufacturers both weight per square foot and gauge of plates. Shell plates must not vary from the specified weight more than two (2) per centum below, nor more than four (4)

per centum above. Forty-one pounds per square foot, for plates one (1) inch thick, will be considered the standard.

59. Shell plates must not average less than the specified thickness along the transverse edges, which form the longitudinal seams in the boiler. No plate must, at any point, fall below the specified thickness more than the following amounts:—.04 of an inch for plates 80 inches wide and over; .03 of an inch for plates between 60 and 80 inches wide; and .02 of an inch for plates less than 60 inches wide.

HULL RIVETS.

60. *Kinds of Material.*—Steel for hull rivets must be made by either the open-hearth or Clapp-Griffith process, and must not show more than .05 of one per centum of phosphorus, nor more than .04 of one per centum of sulphur, and must be of best composition in other respects.

61. Two tons of rivets, made from bars coming from the same heat or blow, shall constitute a lot; and two tensile specimens, each from the end of a different bar, shall be tested from each lot; but in case of rivets less than $\frac{5}{8}$ inch in diameter, the tensile tests required for each lot may be made on bars from the same heat or blow as the lot to be tested, and not more than $\frac{5}{8}$ inch in diameter.

62. *Tensile Test.*—These specimens shall show a tensile strength of from 55,000 to 62,000 pounds per square inch, and an elongation in 8 inches of not less than 29 per centum. If one of these specimens shall fall below 29 per centum, but not below 28 per centum, in elongation, and the average of the two specimens shall show an elongation of at least 29 per centum, the lot shall be considered to have passed this test.

63. *Shearing Test.*—From each lot of rivets, less than $\frac{5}{8}$ inch in diameter, four must show a shearing strength of at least 45,000 pounds per square inch. At the option of the steel inspection board, a shearing test of two rivets, selected from a lot, may be substituted for the tensile test of every fifth lot of rivets manufactured of greater diameter than $\frac{5}{8}$ of an inch. The two rivets must show an average shearing strength of at least 45,000 pounds per square inch, the rivets to be driven at the same heat as used in working.

64. *Hammer Test.*—From each lot six (6) rivets are to be taken at random and submitted to the following tests:

65. Two (2) rivets to be flattened out cold under the hammer to a thickness of one-half the diameter without showing cracks or flaws.

66. Two (2) rivets to be flattened out hot under the hammer to a thickness of one-third the diameter without showing cracks or flaws—the heat to be the working heat when driven.

67. Two (2) rivets to be bent cold into the form of a hook with parallel sides without showing cracks or flaws.

68. *Inspection for Surface and Other Defects.*—Rivets must be true to form, free from scale, fins, seams, and all other injurious or unsightly defects.

BOILER RIVETS.

69. *Kind of Material.*—Steel for boiler rivets must be made by either the open-hearth or Clapp-Griffith process, and must not show more than .035 of one per centum of phosphorus, nor more than .04 one per centum of sulphur, and must be of the best composition in other respects.

70. Two tons of rivets, made from bars coming from the same heat or blow, shall constitute a lot, and four tensile specimens, each from the end of a different bar, shall be tested from each lot.

71. *Tensile Tests.*—The rivets for use in the longitudinal seams of boiler shells shall have from 58,000 to 67,000 pounds tensile strength, with an elongation of not less than 26 per centum in eight (8) inches, and all others shall have a tensile strength of from 50,000 to 58,000 pounds with an elongation of not less than 30 per centum in eight (8) inches.

72. *Hammer Test.*—From each lot six (6) rivets are to be taken at random and submitted to the following tests.

73. Two (2) rivets to be flattened out cold under the hammer to a thickness of one-half the diameter without showing cracks or flaws.

74. Two (2) rivets to be flattened out hot under the hammer to a thickness of one-third the diameter without showing cracks or flaws—the heat to be the working heat when driven.

75. Two (2) rivets to be bent cold into the form of a hook with parallel sides without showing cracks or flaws.

76. *Inspection for Surface and Other Defects.*—Rivets must be true to form, free from scale, fins, seams, and all other injurious or unsightly defects.

RODS, SHAPES, AND FORGINGS, FOR BOILER BRACING.

77. *Kind of Material.*—Steel for stay rods and braces must be made by the open-hearth process, and must not show more than .035 of one per centum of phosphorus, nor more than .04 of one per centum of sulphur, and must be of the best composition in other respects.

78. Two tons of material for boiler braces, from the same heat, shall constitute a lot, from which two tensile test pieces shall be taken, each from a different object.

79. *Treatment.*—All material for boiler bracing, which receives any forging, must be afterwards annealed.

80. *Tensile Test.*—Bracing coming into contact with the fire must have a tensile strength of from 50,000 to 58,000 pounds, and an elongation of not less than 26 per centum in eight (8) inches, if rolled, or thirty (30) per centum in two inches if forged, other bracing must have a tensile strength of not less than 65,000 pounds, and an elongation of not less than 24 per centum in eight (8) inches, if rolled, or twenty-six (26) per centum in two (2) inches, if forged.

81. *Bending Test.*—One bar one-half ($\frac{1}{2}$) inch thick, cut from each lot of the bracing coming into contact with the fire, must stand bending double to an inner diameter of one and one-half ($1\frac{1}{2}$) inches after quenching in water at a temperature of 82° F., from a dark cherry-red heat, without showing cracks or flaws. A similar piece cut from each lot of the other bracing must stand cold-bending double to an inner diameter of one and one-half ($1\frac{1}{2}$) inches, without showing cracks or flaws.

82 *Opening and Closing Tests.*—Angles, T-bars, etc., are to be-subjected to the following additional tests : A piece cut from one bar in twenty to be opened out flat while cold ; a piece cut from another bar in the same lot shall be closed down on itself until the two sides touch without showing cracks or flaws.

83. *Inspection for Surface and Other Defects.*—Stay-rods and bracing must be true to form, free from seams, hard spots, brittleness, sand or scale marks, and defects generally.

BOILER TUBES.

84. Steel for boiler tubes must be made by the open-hearth process, and must not show more than .035 per centum of phosphorus, nor more .04 per centum of sulphur, and must be of the best composition in other respects.

85. Every tube must be tested by hydrostatic pressure to at least 500 pounds per square inch and carefully inspected, while under pressure, for any signs of defects or weakness. From the waste ends of one in every ten stay tubes, and one in every twenty common tubes. test pieces will be taken which must successfully pass the following tests :

86. A strip cut from each piece, after being heated to a cherry-red and quenched in water at about 80° Fahrenheit, must stand being bent flat back on itself without showing cracks or flaws.

87. After annealing, the ends of tubes two (2) inches and over in diameter most stand flanging cold, to a half-inch collar; those of $1\frac{1}{2}$ inches in diameter to a one-fourth-inch collar, and those of 1-inch diameter to a three-sixteenth-inch collar without cracks.

88. After annealing a portion of the tube one inch long must stand crushing (in the direction of its axis) under a steam hammer till flattened upon itself without cracks or flaws.

89. If the tubes are lap-welded, a piece of sufficient length will be heated to a cherry-red and, while at this heat, a taper pin (also heated) will be driven in till the tube splits. Not more than half the test pieces must part in the weld.

90. A strip about one inch wide and four inches long, cut lengthwise of the tube, must stand bending, while at a dull red heat, around a half-inch bar without signs of distress.

91. All tubes will be carefully examined for surface and other defects and laminations, and none accepted that are not entirely free from them; and any tubes which may show such defects afterwards, while being worked or pickled, will be rejected and others must be furnished by the makers.

92. If safe ends are welded on, instead of the tube end being swelled or upset, any tube which shows defective welds while the threads are being cut will be rejected and another must be furnished by the makers.

GENERAL REQUIREMENTS FOR FORGINGS (NOT INCLUDING BOILER BRACING).

93. *Kind of Material.*—All steel for forgings must be made by the open-hearth process, and must not show more than .06 of one per centum of phosphorus, nor more than .04 of one per centum of sulphur, and must be of the best composition in other respects.

94. *Treatment.*—All forgings must be annealed, as a final process, unless otherwise directed.

95. *Inspection for Surface and Other Defects.*—All forgings must be free from slag, cracks, blow-holes, hard spots, sand, foreign substances and all other defects affecting their value.

96. *Kind of Ingot.*—The tests, herein laid down, are adapted to exhibiting the qualities of forgings made from the ordinary cylindrical, square or polygonal ingots, cast on end. If the contractor intends to use any other, or special form, he must advise the department beforehand, in order that test bars may be so located as to exhibit the value of the forging made from the new form.

97. If ingots are made by any process different from the ordinary one, the amount of discard from them will be determined by the steel inspection board, with a view to leaving the portion of the ingot to be used at least as good as the metal of a sound ingot, cast in the ordinary way, from which 30 per cent. of weight had been discarded from the top and 5 per cent. from the bottom.

98. *Uniformity Tests.*—Whenever, from the form of the ingot or otherwise, the inspector considers that certain parts of a forging may not have received sufficient hammering, or other treatment, he will be careful to make the tests under Article 19, directing his examination particularly to the parts which he may consider to have been neglected.

99. A length of forging, except connecting and piston rods, may be machined into two or more pieces after testing.

CONNECTING AND PISTON-RODS.

100. Ingots for connecting and piston rods will be cast on end, and at least thirty (30) per centum, by weight, will be discarded from the upper end.

101. From each head of each rough-forged connecting-rod a longitudinal test piece shall be cut. From each rough-forged piston-rod a test piece shall be taken from the head or from a prolongation thereof, and one from a prolongation of the rod at the other end of the forging. In no case must the part from which the test piece is taken have received any more reduction than the part in the same half of the forging that has received the least reduction.

102. *Tensile Test.*—No test piece must show less tensile strength than 65,000 pounds for connecting rod, nor an elongation less than 25 per centum in two (2) inches. Test pieces from piston-rods must show not less than 58,000 pounds tensile strength, and an elongation of not less than 28 per centum in two (2) inches.

103. *Bending Test.*—One longitudinal bar one-half ($\frac{1}{2}$) inch thick, cut from each piston-rod forging, must stand bending double to an inner diameter of one and one-

half ($1\frac{1}{2}$) inches after quenching in water at 82° F., from a dark cherry-red heat, without showing cracks or flaws. A similar piece cut from each connecting-rod forging must stand cold-bending double to an inner diameter of one and one-half ($1\frac{1}{2}$) inches without showing cracks or flaws.

CRANK, THRUST, LINE AND PROPELLER SHAFTS OF MAIN ENGINES.

104. Ingots for main engine shafting will be cast on end, and at least thirty (30) per centum, by weight, will be discarded from the upper end.

105. Each length of rough-forged shaft must have a piece cut from each end of sufficient size to allow of the removal of specimens for tensile test, parallel with the axis of the shaft.

106. From the piece removed from the end which was uppermost in the ingot, four test pieces shall be taken—two at the circumference of finished diameter and two at one-half radius from center. Two specimens will be taken at one-half radius from center of the other piece. At the option of the manufacturer, the above pieces may be taken at right angles to the axis and at right angles to the shaft radius. These pieces to be broken under the same conditions as prescribed for tensile tests. In the case of hollow shafting (either forged or bored) the inside specimens will be taken within the finished section prolonged, but as near as practicable to one-half radius from center.

107. If the couplings are forged on the shaft, test pieces may be taken from a prolongation of the shaft which shall not have received any more reduction than the shaft at its least diameter. In the case of solid forged crank-shafts, in addition to the test pieces above specified, two test pieces will be cut from the metal slotted out from each crank, one from the surface of the metal slotted out and one at a distance of one-half the radius of the shaft from the plane passing through the axes of the shaft and crank-pin; both being taken in a plane perpendicular to that last mentioned and containing the axis of the ingot. If desired, the piece between the arms of the crank may be slotted out before annealing; in which case the two test pieces, above-mentioned, shall be taken from spare metal to be left on the crank-pin, on the side next to the former position of the piece slotted out. One in a plane at half the radius of the shaft from the plane containing the axis of the shaft and crank-pin, and the other at or near the surface of the metal, but not near the position of the first test piece.

108. In the case of built-up crank-shafts, test pieces will be cut from each separate forging of the shafts.

109. *Tensile Test.*—Of all the foregoing test pieces, none must show less tensile strength than 58,000 pounds. The average elongation of the four pieces from the upper end must be at least twenty-eight per centum in two (2) inches. The average elongation of the two pieces from the lower end must be at least twenty-eight per centum in two (2) inches. No piece must show less than twenty-four per centum elongation in two (2) inches.

110. Should but one piece fall below the minimum requirement in either particular, the steel inspection board may allow two additional specimens to be taken in close proximity to the failing specimen, and the average results of these two specimens shall replace those of the failing specimen, provided neither falls below the minimum requirement in either particular.

111. *Quenching Test.*—Bars one-half ($\frac{1}{2}$) inch thick, cut at the outer radius, must stand bending double to an inner diameter of one and one-half ($1\frac{1}{2}$) inches after quenching in water at 82° F., from a dark cherry-red heat, without showing cracks or flaws.

CRANK AND WRIST PINS.

112. Steel for all separately made crank and wrist pins, except those of main engine shafts, shall be tested as follows:

113. A lot shall consist of the forgings made from the same ingot. From the upper end of the piece made from the material which was uppermost in the ingot, and which must have undergone no more reduction than the average reduction in cross-section of the forgings of the lot, two tensile test pieces shall be taken.

U. S. PROTECTED CRUISER, CHICAGO.

114. *Tensile Test.*—Neither of these test pieces must show less tensile strength than 80,000 pounds nor an elongation less than fifteen per centum in two (2) inches.

115. The tensile test of any single length of forging may be regarded as satisfactory, provided it shows at its upper end a tensile strength of at least 80,000 pounds, and an elongation of at least fifteen per centum in two (2) inches.

Forged Steel Engine Columns, Etc.

116. One longitudinal tensile specimen shall be taken from a prolongation of each end of each column, forged not smaller than the rough diameter of the shaft, or to be taken from the metal that is to be bored out from each end. These specimens are to be taken at a distance from the axis of the forging equal to half the radius of the column.

117. *Tensile Tests.*—Each of the tensile specimens must show a tensile strength of at least 58,000 pounds per square inch, and an elongation of twenty-five per centum in two (2) inches.

Forged Tillers.

118. At least one longitudinal tensile specimen will be taken, as directed by the inspector, from each important forging for tillers.

119 *Tensile Test.*—Each of the tensile specimens must show a tensile strength of at least 58,000 pounds, and an elongation of at least 28 per centum in two (2) inches.

120. *Bending Test.*—One bar, one-half ($\frac{1}{2}$) inch thick, taken from each lot of forgings from the same heat must stand bending double to an inner diameter of one and one-half ($1\frac{1}{2}$) inches after quenching in water at temperature of 82° F., from a dark cherry-red heat, without showing cracks or flaws.

Miscellaneous Forgings.

121. Forgings for which special tests are not provided may be tested by heats, as follows:

122. *Tensile Test.*—Four test pieces, each, if practicable, from a different object, and from the material uppermost in the ingot, shall be taken from each lot of material forged from the same heat and annealed in the same furnace charge. No piece must show less than 58,000 pounds tensile strength. The average elongation of the four pieces must be at least 28 per centum in two (2) inches. No piece must show less than 24 per centum in two (2) inches.

123. The tensile test of any single length of forging may be regarded as satisfactory, provided it shows a tensile strength of at least 58,000 pounds, with an elongation of at least 28 per centum.

124. *Quenching Test.*—From each heat two bars, one-half ($\frac{1}{2}$) inch thick, will be taken, which must stand bending double to an inner diameter of one and one-half ($1\frac{1}{2}$) inches after quenching in water at 82° F., from a dark cherry-red heat, without showing cracks or flaws.

Miscellaneous Rolled Bars for Bolts, Bolt Blanks, Etc.

125. The material and chemical requirements must be the same as for hull rivets.

126. Two tons of bars coming from the same heat or blow shall constitute a lot, and two tensile specimens, each from the end of a different bar, shall be tested from each lot

127. *Tensile Tests.*—These specimens shall show a tensile strength of not less than 55,000 pounds per square inch, and an elongation in 8 diameters of not less than 25 per centum.

128. When it is not practicable to take tests from the full sized bars, the test pieces shall be two (2) inches between measuring points, and have a diameter of one-half inch, with an elongation of 28 per centum.

129. *Hammered Tests.*—From each lot three pieces shall be taken at random, and submitted to the following tests:

130. One piece to be flattened out cold under the hammer to a thickness of one-half the diameter, without showing cracks or flaws; one piece to be flattened out hot

under the hammer, to a thickness of one-third the diameter, without showing cracks or flaws; one piece to be bent cold into the form of a hook without sign of fracture. If after inspection these bars are to be made into headed bolts or other irregular forms by the contractor, and the inspector has reason to suspect an important loss of ductility due to the final process of manufacture, he will make a sufficient number of rough bending tests to determine this point, and if the articles show brittleness they must be rejected, or be annealed, and the bending tests be repeated.

BLOOMS.

131. Blooms from which miscellaneous forgings are to be made at the smithy, will be tested in the same manner as miscellaneous forgings, except that the tensile test pieces may all be taken from the upper end of the upper bloom of an ingot from the heat to be tested.

132. Blooms from which separately made crank or wrist-pins are to be made at the smithy, will be tested as required for forgings for such pins; test pieces being selected from the upper end of the upper bloom, and which has received no greater reduction than the average of the blooms intended for said pins.

STEEL CASTINGS.

133. *Kind of Material.*—Steel for castings must be made by either the open-hearth or the crucible process, and the following castings: Pistons, engine frames or columns, bed-plates, reversing arms, rock-shaft arms, cross-heads, stern-posts, stems, rudder-frames, struts, hawse-pipes, shaft-tube castings, stern-corner castings and turret-rollers must not show more than six-hundredths (.06) of one (1) per centum of phosphorus. All other castings must not show more than one-tenth (.1) of one per centum of phosphorus and must be of the best composition in other respects.

134. *Treatment.*—All castings must be annealed, unless otherwised directed. (See Art. 18.)

135. Sound test pieces shall be taken in sufficient numbers to thoroughly exhibit the character of the metal in the entire piece from each of the following castings, viz: Stem, stern-frame, rudder-frame, shaft struts or brackets, torpedo-tubes, hawse-pipes, main cylinder and valve-chest liners, main pistons and followers, cross-heads, bed-plates, and columns of main engine, main valve stem, cross-heads, air-pump columns, shaft couplings, and all castings to be used as armor, and all large castings not herein specified.

136. All other castings may be tested by lots as follows: A lot shall consist of all castings from the same heat annealed in the same furnace charge. From each lot two tensile and one bending specimen shall be taken, and the lot shall be passed or rejected on the results shown by these specimens.

137. If there are many unsound test specimens coming from a casting, the inspector will examine carefully to detect porosity or other unsoundness in the casting itself.

138. The specimens may, at the discretion of the inspector, be cut either from coupons to be molded and cast on to some portion of the casting, or from sinking heads, in cases where such heads of sufficient size are employed. Coupons to be so fixed as not to interfere with the successful making of the casting, but at the same time showing the quality of the material. In the case of castings tested by lots, the test pieces may be taken from the body of a casting from the lot, if so desired by the manufacturer.

139. *Tensile Test.*—The tensile strength of castings shall be at least 60,000 pounds, with an elongation of at least fifteen per centum in eight (8) inches for all castings for moving parts of the machinery, and at least ten per centum in eight (8) inches for other castings.

140. The tensile test of any single casting will be considered satisfactory, provided it shows a tensile strength of at least 60,000 pounds and the required elongation.

141. A test to destruction may be substituted for the tensile test, in the case of small or unimportant castings, by selecting three castings from a lot as specimens.

This test must show the material to be ductile and free from injurious defects, and suitable for the purposes intended. A lot shall consist of all castings from the same heat, annealed in the same furnace charge.

142. *Bending Test.*—One bar or more from each object mentioned in article one hundred and thirty-five, or one bar from each lot, one (1) inch square, shall bend cold, without showing cracks or flaws, through an angle of 120° for castings for moving parts of machinery, and 90° for other castings, over a radius not greater than one and one-half ($1\frac{1}{2}$) inches.

143. *Percussive Test.*—In the case of the stem, stern-post, and shaft-bracket, and other large castings, the castings are to be raised to an angle of 60° from the horizontal and allowed to fall on ground of the same hardness as a good macadamized road. After the percussive tests, the stem, stern-post, shaft-brackets, and other large castings are to be suspended in chains and hammered all over with a heavy sledge-hammer. No cracks, flaws, defects, nor weakness must appear after such treatment.

144. *Inspection for Surface and Other Defects.*—All castings must be sound, free from brittleness, injurious roughness, sponginess, pitting, porosity, shrinkage, and other cracks, cavities, foreign substances, and all other defects affecting their value.

Particular search must be made at the points where the heads or risers join the castings, as unsoundness at this point is thought likely to extend into the casting. Such cavities are often due to deficient size of risers or to the smallness of the neck, both of which prevent the proper feeding of the casting.

145. In case the results obtained from the first submission of a casting do not conform to the specifications, the steel inspection board, if deemed advisable, may permit the manufacturer to retreat the casting and submit additional specimens, and the results obtained from the former specimens will no longer be considered.

B. F. TRACY,
Secretary of the Navy.

Approved September 1, 1890.

The principal producers of plates are Carnegie, Phipps & Co., the Carbon Iron Company, the Linden Steel Co., Park Bros., Phipps, Nimick & Co., the Moorheads, and some other firms of less note in Pittsburgh; the Chester Rolling Mills of Chester; together with concerns in Johnstown, Pottsville, Pottstown and other places. Beams, angles, bulbs and Z and channel bars are principally made at Phœnixville and in Pittsburgh. The most successful casting establishments, particularly in steel, are the Standard Steel Casting Company of Thurlow, and the Fort Pitt Foundry of Pittsburgh. Heavy forgings are made by the Midvale works, of Nicetown, near Philadelphia, and by the Bethlehem works. In ordering materials the schedules are sometimes submitted to a number of concerns for competitive bids and sometimes orders are given outright without competition, according to the best judgment of the builders. Of course the object is to secure delivery of material as nearly as possible in the order of its incorporation in the ship and therefore the first plates ordered are those which are fashioned to form the keel.

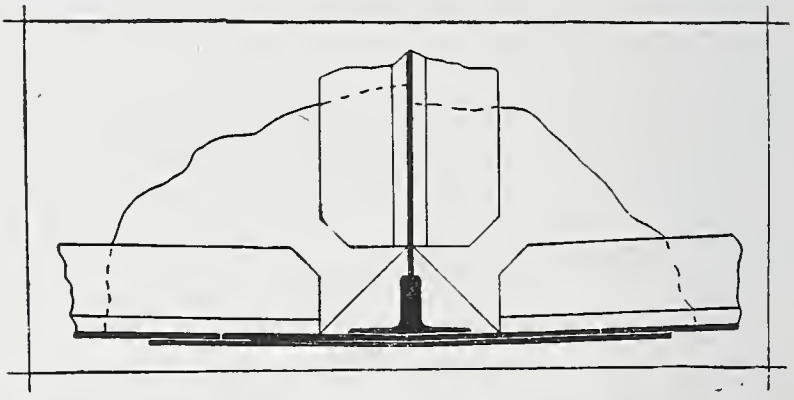
The next step is to prepare the "blocks" on which the vessel is to be built and from which she is to be launched. The "blocks" consist of a number of short beams or "balks" usually of yellow pine, raised to a sufficient height from the ground to enable the workmen to pass freely under the keel at all points, and they are generally spaced from four to six feet apart the whole length of the ship. Care must be taken to provide a foundation for the blocks, generally by driving piles of sufficient

solidity to prevent the least settling, as the weight of the ship upon them increases with the progress of construction. The blocks are laid with an upward slope from the water, to give the hull the necessary inclination for launching. As a rule this slope is about five-eighths of an inch to the foot, which, in the case of a vessel like, for example, Cruisers 12 and 13, elevates the bow about 21 feet above the level of the stern.

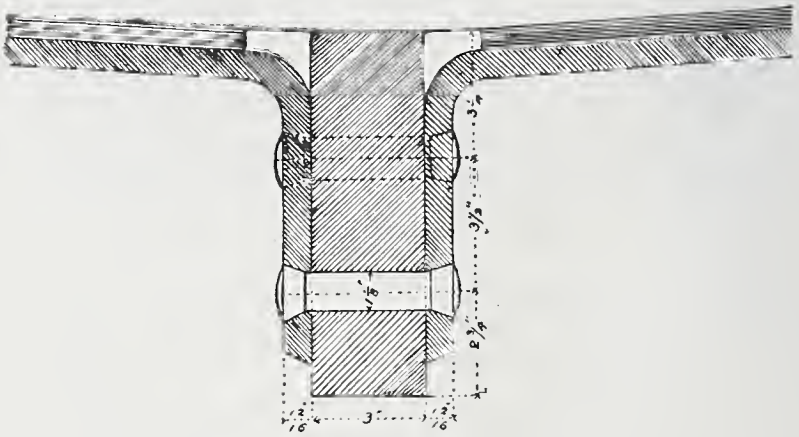
Naturally the line formed by the top surfaces of the blocks must be an exact mold of the keel. To perfect this adjustment a mold is made from the "sheer-plane" of the ship (the sheer plane is the longitudinal section cut on the middle line fore and aft). A mold is made from this, showing the exact sweep of the keel and the blocks are faired up to this mold.

All preliminaries having now been completed, foundations are made on each side of the blocks to sustain the "ground ways" for launching, and the necessary material being on hand the keel is laid.

There are several kinds of keels. If the design calls for a centre keel it may be either a "bar-keel" which is a solid bar of forged iron in suitable length scarphed together from stem to stern, or a "box-keel" which is built up of plates riveted together and forming a hollow trough, so to speak. The latter practice, however, particularly in naval vessels, and



FLAT KEEL.



BAR KEEL.

to a growing extent in merchant ships, is to make the centre keel flat or coincident with the bottom of the ship, and to attach a short projecting keel to each bilge of the vessel, the principal office of which is to modify rolling. In fact the centre keel is an inheritance from the days of sail power, when its chief office was to aid in "holding the ship up to the wind" when running close-hauled on a tack; but in vessels propelled entirely by steam this need no longer exist and the consequence is the gradual disappearance of the bar-keel in the more modern construction. The dimensions of plates used for the keel depends on the size of the ship. In case of a merchant ship it is settled almost entirely by what are called the rules of ship-building, which, to a large extent in this country and England, are according to Lloyd's Register. These rules fix the sizes of scantling and must be followed as they are made a bases of insurance by the underwriters. The sizes of the scantling are fixed by what is known as a scantling number, which is dependent upon the length, breadth, depth, girth, or longitudinal section of the ship. This is not so in the case of a man-of-war where all this is generally calculated, the man-of-war usually being stronger than merchant ships on account of greater subdivisions, and as government vessels do not seek insurance they are not bound by underwriters' rules. As soon as the keel is laid, the frames are bent. In order to have the frame exactly fair, in some ship-yards the frame is taken from the bending slab and taken to what is known as a press, which is worked by hydraulic power or hand, where it is pressed to the exact shape of the wooden mold, which was taken from the body plan. In order to make this doubly sure, it is taken to the black-board from which the wooden mold was formed and laid directly on the board, and if there has been any change in shape by virtue of its being heated and cooled, it is pressed again until it is exactly the shape of the line of the ship. Each frame has been bent for a particular position, this place being fixed on the keel.

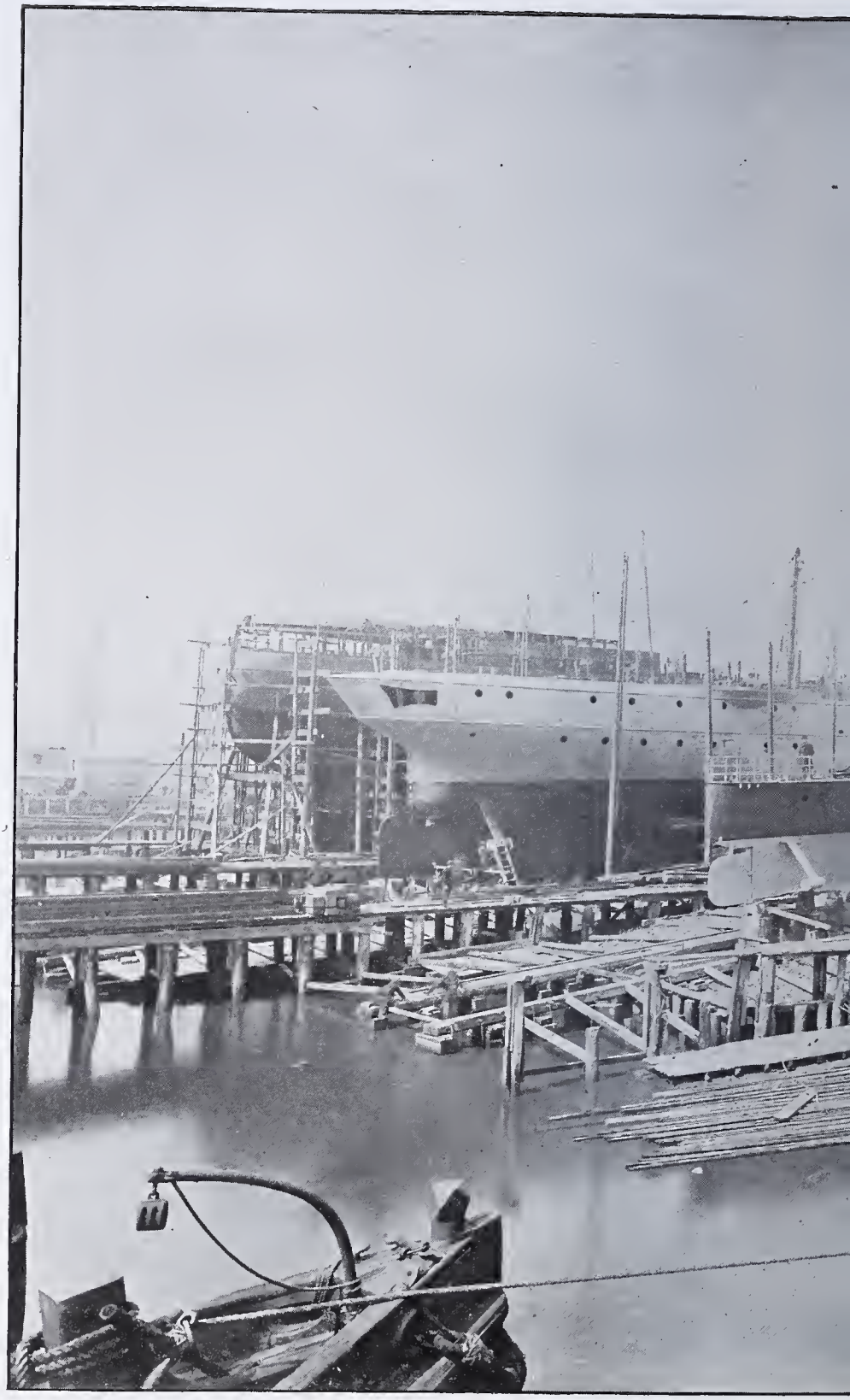
In placing the frames at the various points, we begin with the midship frame. The midship frame is raised by tackles, worked from a pair of derricks, one on each side. The regulation of the first frame is very important, and when raised, this frame is shored and regulated in proper plane and in exact position. If possible, a beam is raised with it. Each subsequent frame forward and aft of the midship is raised in its turn and regulated both by its own bearing to the keel and by that of its next neighbor.

There are two general systems of bottom-framing, called the transverse and the longitudinal or bracket system. In the former the floor plates are continuous from the vertical keel on each side to the bilge and the keelsons are worked in short sections, called "intercostals," between them. But in the longitudinal system the keelsons extend continuously, parallel to the vertical keel for considerable distances amidships, and

the floor plates are worked between them in short sections called brackets. This system is now almost universal in double-bottomed ships, whether designed for naval or commercial purposes, and the longitudinals usually extend the whole length of the boiler and machinery spaces, the ends of the ship forward and aft of these limits usually being carried out on the transverse system. The effect of longitudinal construction is to impart great rigidity to the hull and it is considered imperative in the best practice in all cases where ships are to be provided with heavy engines, and to sustain the strains due to exertion of the great power required for high speed. Single-bottomed ships built on the transverse system are now in almost all cases "stiffened" by running heavy Z bars or angle bulbs fore and aft, worked on top of the floors or inside of the frames.

We now come to the plating of the ship. The floor plates are fastened to the longitudinals by angle-clips; the outside plating by angles on its bottom, and the inner bottom plating by angles on its top. Ships are plated in various ways, but the most common is what is called the raised and sunken strakes. The first strakes are the inner. The edges are marked on the frames or nicked, and these are generally faired in. In taking off the stakes what is called a template or mold is made up of thin boards somewhat larger in outside dimensions than the plate, and crossed battens are fitted on the templates at the frames; that is, put up against the frames and held in place by little bent irons. Upon that are marked the edges of the butts and position of the rivets. Then the batten is taken down from the ship and laid on the plates; then from that you get the exact size of the plate and the position of all the rivet holes in it. The edges of the plate are then sheared approximately to shape and the butts are planed to the lines obtained from the templates, after which the position of the rivets in the edges and butts are laid off; then the holes are punched and countersunk and the plate is put through the bending rolls to give it the shape of the side of the ship. If there is much shape, iron molds are taken out for each frame, that is, a piece of soft iron at each frame, and this gives the shape to be followed in bending the plate. In some ships some parts have to be flanged out and bossed. The plate must be taken to the furnace and shaped according to the wooden mold or pattern. When the plate has been sheared, planed, punched and countersunk, as before described, it is temporarily put in place and bolted up.

When it comes to working on the outside strake, the same kind of template is used, but you must get from this same template the position of all the holes in the edges, as they must fit in the holes which have been laid off in the inside plate. The plates of the outside strakes are punched from the inside, and the holes for the edge rivet for the inside strake must be punched from the outside, while the holes for the rivets securing to the frame and butt fastenings must be punched from the in-



'LY BUILT.

side. In order to fill up the space which exists between the outer strake and the frame, a "liner" is put in. These liners fill in the space between the frames and the outside plates. Little templates are made for them and they are fitted in place after the frames are up. After the preparation is completed the rivets are driven in place. Sometimes the outer strake is riveted through liner and frame together, and sometimes to the projecting edges of the liner.

While the plating is going on, the work in the inner ship is advancing, and the riveting of the plates and angle pieces goes on. The temporary bolting spoken of is for the riveters. The plates are hung by two or three bolts only. This is done by sub-contract usually. In the meantime we are getting in the beams or rafters of the deck. Work is advancing on the inside of the ship all this time, and plating for the deck is going in. The part of the decking next to the side is called the stringer plate. The bulkheads forming sub-divisions of the ship are being gotten out practically the same as the side plating, and templates are made for them in the same way. They are stiffened with angles or other stiffeners so that they can stand the send of bodies of water which may get in the vessel, or stop the waters and keep them from getting into another part of the ship. The size of the rivets are specified or divided generally into two divisions—the water-tight and the non-water-tight. The rivets in the edges and butts have all water-tight spacing so that they will hold a calked joint; but in the frames where their office is simply to hold on, their spacing is wider and is regulated by the strain to be withstood. After all the rivets are driven, a man goes around and tests them with a hammer. If any are found loose, they are cut out and new ones driven. This work is usually done by contract or piece work. Every rivet is thus inspected, and, when approved, it is painted. The rivets are heated red in a rivet furnace, and passed by a boy to the place where they are to be used. The riveting gang proper consists of two riveters, a holder—that is, the rivet is put in the hole. held in its place at the back, and driven by riveters, of whom generally one is a right and one a left-handed riveter. In some parts of the ship only one man can drive. When the riveting is advanced to some extent, the edges and butts are calked, which is simply knocking down the material so tight that water will not pass throught it. This is done either by hand or by an ingenious little machine of recent invention called a pneumatic calker. The government generally tests with water under pressure. In merchant work this is not generally done, but is simply inspected by the company's man or the insurance surveyors, and after this inspection it can be painted.

As soon as the ship has been framed and plated up and the main structure completed, we come to the question of laying the decks and other wood work generally. The decks are made from three to four inches thick, and are bolted with deck bolts, the head of the bolt being

sunk below the surface of the deck, and the cavity filled up with a plug of wood above, so as to make it appear a solid piece of wood.

When the frame of the ship has been completed to the ends, the stem and stern-posts are erected in place. Formerly these were of forged iron, but now they are usually made of cast steel. All men-of-war have stem and stern-posts of cast steel. They are put up in place and the keel plates are worked around and riveted to them. The stern post, if a single screw ship, is bored for a screw tube, and generally the after section of the screw shaft is put in place before launching.

In the foregoing brief survey of the process of shipbuilding, details have necessarily been avoided, because an attempt at particular description of all the divisions and sub-divisions of industry embraced, would necessitate a large volume. In many directions the genius of the age has expressed itself in labor saving-machines of various kinds and in improved handling appliances. But notwithstanding all this, the fact remains that a very large proportion of the skilled work pertaining to the construction of a ship's hull is still done by hand and, in the nature of things, must so continue. Certain parts may be built up separately by the hydraulic riveter before being put in place; but the use of this machine is necessarily limited in its scope and the greater part of the riveting, drilling in place, chipping and much of the calking, must be done by hand now and in the future as heretofore. Now we are ready to launch the vessel.

The vessel is built, as before stated, on a foundation of keel blocks extending her entire length. She is further supported by numerous heavy shores or props Before launching we must lift her from the keel blocks and the shores must be removed. So that an entirely new system of supporting her must be provided which consists of the launching ways.

The launching ways consist of the ground ways and the bilge or sliding ways. The ground ways are fixed tracks laid on piling and blocks, one on each side of the vessel, extending well down in the water.

On these, other ways called the sliding ways are laid, tallow and oil being put between, so that the upper ways can slide easily along the ground ways into the water. From the sliding to the bottom of the vessel, packing of wood is fitted carrying the ground ways up to the bottom. When wedges are driven in between the sliding ways and the packing, it is easily understood that she will be lifted up and supported on the two ways which are about one-third the width of the vessel apart. Now if the keel blocks and shores are removed, we have the vessel supported entirely by the launching ways. The upper ends of the sliding ways are carried out at a thickness of about four inches and this is bolted through to the ground ways. This is what holds the vessel and as soon as it is sawed off, she slides into the water.

Launching is always the most delicate part of the ship-builder's work. It involves the greatest responsibility, concentrated in the shortest time

PREPARATION OF LAUNCHING WAYS.

and with little or no opportunity to avert the consequences or retrieve the results of any serious errors, and naturally this responsibility is augmented in a highly progressive ratio by the size and cost of the vessel to be "put overboard," as launching is usually termed in the parlance of the ship-yard.

Many things may happen to disturb the symmetry of a launch. If the weather is extremely cold, the tallow between the ways may not act properly and it may be necessary to force her off by hydraulic jacks.

There have been instances in England, where a vessel was launched with a number of people on board, partly capsized because of neglect to provide proper ballast, or recklessly imperfect calculations as to her initial stability, causing great loss of life. In view of such possibilities the crowning moments of a ship-builder's career are those, when by reason of the perfect adjustment of every mechanical appliance, accurate calculation of every mathematical factor and perfect execution of every manual detail, a colossal ship glides noiselessly down the slope of her ways like a thing of life and takes to her destined element on a perfectly even keel with a dip of her graceful bow to an admiring audience, and then floats with the tide as if serene in the majesty of a graceful *début*.

No one who has not felt the responsibility of such a work can even faintly appreciate the triumph of such a result.

When the vessel is launched she is taken at once to the shears and the boilers and engines are hoisted on board and the whole vessel carried on to completion.

We now turn to another branch of our theme, to which recent developments and modern genius have lent an interest surpassing even that which appertains to the building of the ship. This is the design and construction of her motive machinery. An eminent authority has said that "a marine engine is the noblest work of man." And the truth of this aphorism seems not far to seek when one contemplates the enormous and intricate, yet to the practiced hand simply and obedient monsters of steel, iron and brass, which as if instinct with animate sense throbs to the mighty breath of steam in the bowels of the great ships, regardless of the elements and defiant of storms, converting to the most commonplace uses of art the most colossal forces of nature.

As stated at the outset of this paper, an essential element in the "scheme" of a new steamship is the general outline of her boilers and machinery. The size and character of the ship having been determined with reference to her proposed uses, the next step is to allot certain spaces and weights to engine power sufficient to give her the contemplated speed. We will not stop here to discuss the important difference of conditions which prevails in this respect between vessels destined for commerce and those calculated for war, except to remark that such a difference exists and is now a recognized factor in the science of marine engineering; and to explain generally that, in the construction of en-

gines for war-ships, economy of weight and space in proportion to power is the chief desideratum, while in the case of merchant vessels, whether for freight or for passenger traffic, economy of coal consumption is mainly sought.

As soon as the plans of the ship are sufficiently advanced in the construction or hull department, drawings of the frames, floors, etc., throughout the space allotted to machinery are taken off and furnished to the engine department as a basis for detailed design of the boilers, machinery, and coal bunkers.

With these data as a basis, the designing of the motive machinery begins.

The approximate horse-power required to produce the speed contemplated in the scheme of the ship having been previously decided, the problem now is to provide that power on the most economical basis within the limitations of space and weight that have been determined on. This involves a great number of considerations. The principal ones are:

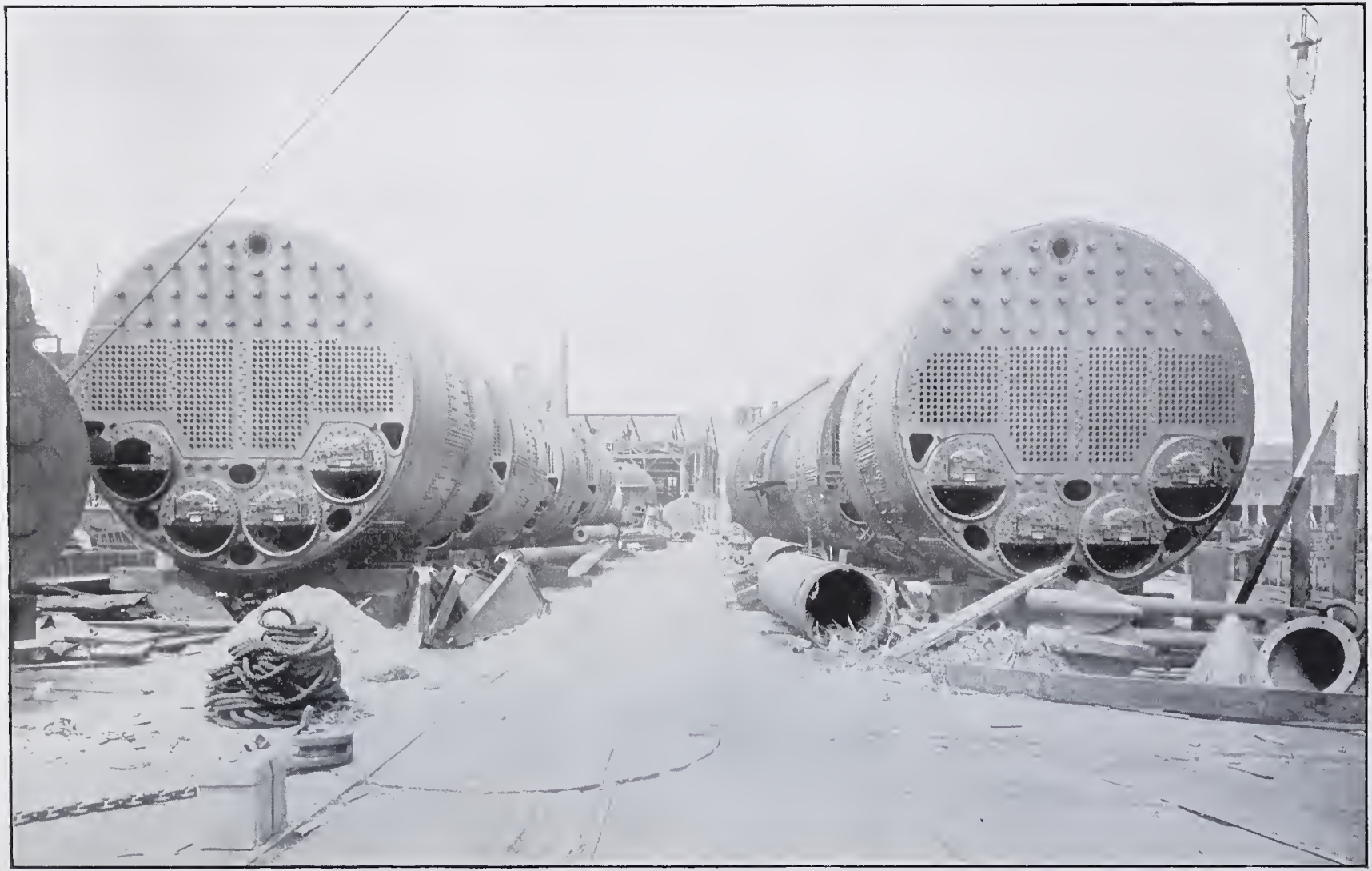
First. Dimensions and characteristics of boilers, such as length, diameter, number of square feet of grate surface and of heating surface, working steam pressure, dimensions of steam pipes and of their valve connections, location and capacity of coal bunkers, arrangement of fire rooms; and, if forced draught is to be used, provision for blowers.

Second. Dimensions and number of main steam cylinders, such as the piston diameter of each, length of stroke, rapidity of stroke or "piston speed" required to produce the desired power, dimensions of working parts necessary to withstand the strains incident to the amount of power be put through them, character of valve gear and dimensions of valve openings, type of actuating and reversing gear, dimensions of crank and driving shafts, adjustment of bearings, and diameter, pitch and form of propeller screw or screws if a twin screw-ship.

Third. Arrangement and adjustment of auxiliaries, such as air pumps, condensers, feed pumps, freeing pumps, steering gear, hoisting gear, etc., if a merchant ship and numerous other mechanical appliances connected with the operation of the battery and gun protection, if a man of war; dynamos and other elements of electric lighting apparatus, evaporators and distillers to produce fresh water on board and a thousand and one other details, each apparently minor in comparison to the importance of the main engines but each indispensable to the perfect economy of the masterpiece, which is the marine engine as a symmetrical whole.

When all these details have been elaborated and the necessary drawings and calculations perfected, patterns for the castings and expansion plans for the forgings are made, and orders are given for the material.

The principal castings are the bed plates, cylinders with their valve chests, frames—if the engine is vertical—shaft tubes and "struts" or outboard shaft supports—if a twin screw engine—cylinder covers, pistons, pillow blocks, cylinder liners, and many other castings of less size,



BOILERS.

and note in iron or steel and all working bearings in brass or white metal. The very highest qualities of iron or steel are required in these castings, the cylinders and their appurtenances being made invariably of best charcoal iron in all approved practice.

The principal forgings are crank shafts, line shafts and thrust shafts, piston-rods, connecting-rods, cross-heads, rock shafts, link bars, valve connecting-rods, eccentric straps, air-pump connecting levers if the air-pumps take their motion from the main cross-heads—supporting columns in vertical engines, and stay rods in horizontal ones, with smaller forgings too numerous to mention. The propeller screws are usually cast of manganese bronze in the best modern practice, and for ships of any considerable size the custom is to make them on the "built-up" system—that is to say, with a separate hub or "boss," to which the blades are bolted.

In all well-ordered ship-building the construction of the boilers begin simultaneously with the laying of the keel.

In no department of ship-building are skill and experience of more vital importance than in the boiler shops; for the boilers are to the steamship what the heart is to the human body; and upon the proper discharge of their functions depend the whole efficiency of the structure. There is doubtless wider difference in quality of boiler work and in consequent performance between different establishments than in any other branch of the art; some shops turning out boilers which begin with first-class performance on the preliminary trial trip and maintain that standard throughout their period of duration, while others begin with leaky tubes, sprung tube sheets and bad joints, and continue an unsatisfactory career until they land in the scrap heap at a time when a good boiler would be at its best. Slovenly work on a ship's hull may be remedied by thorough repair. Even imperfect construction or defective adjustment of the working parts of an engine may be corrected. But there is no salvation for a botched boiler, because one defect always breeds others. Steam at 160 pounds to the square inch pressure, is an agent that will tolerate no trifling, and hence, unless a boiler is perfect at the start in every detail, the cheapest disposition that can be made of it is to break it up and put in a new one that is perfect.

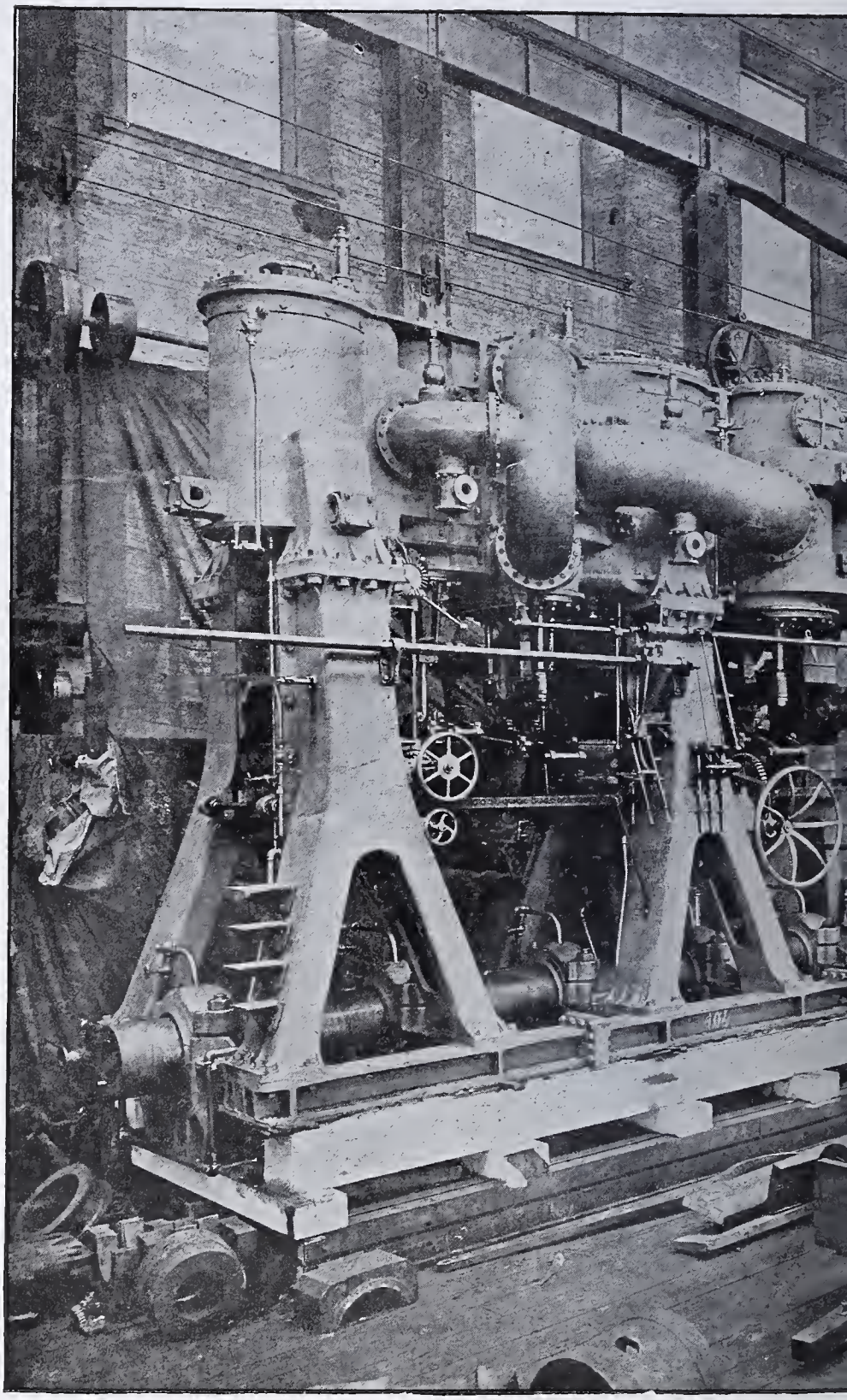
The boiler in most common use for seagoing ships is of the cylindrical, fire tube type, with inside furnaces, and is usually termed the "Scotch boiler." Other types are used, such as the "through and through," or locomotive boiler, and the water coil or tubulous system, of which there are many kinds. The essential difference is that in the cylindrical and locomotive types the fire goes through the tubes which are immersed in the water, while in the coiled types, the water is forced through tubes surrounded by fire. As far as developed the latter system presents many objections, chief among which are increased liability to derangement of the parts, great delicacy of manipulation as to feed water and firing, difficulty of access for any needed repairs, and frequent impossi-

bility of such repairs on board ship. Consequently these boilers have not come into general seagoing use, but are limited to yachts and other small craft plying near shore or, in naval service, to torpedo boats and vessels which are not expected to make extended cruises.

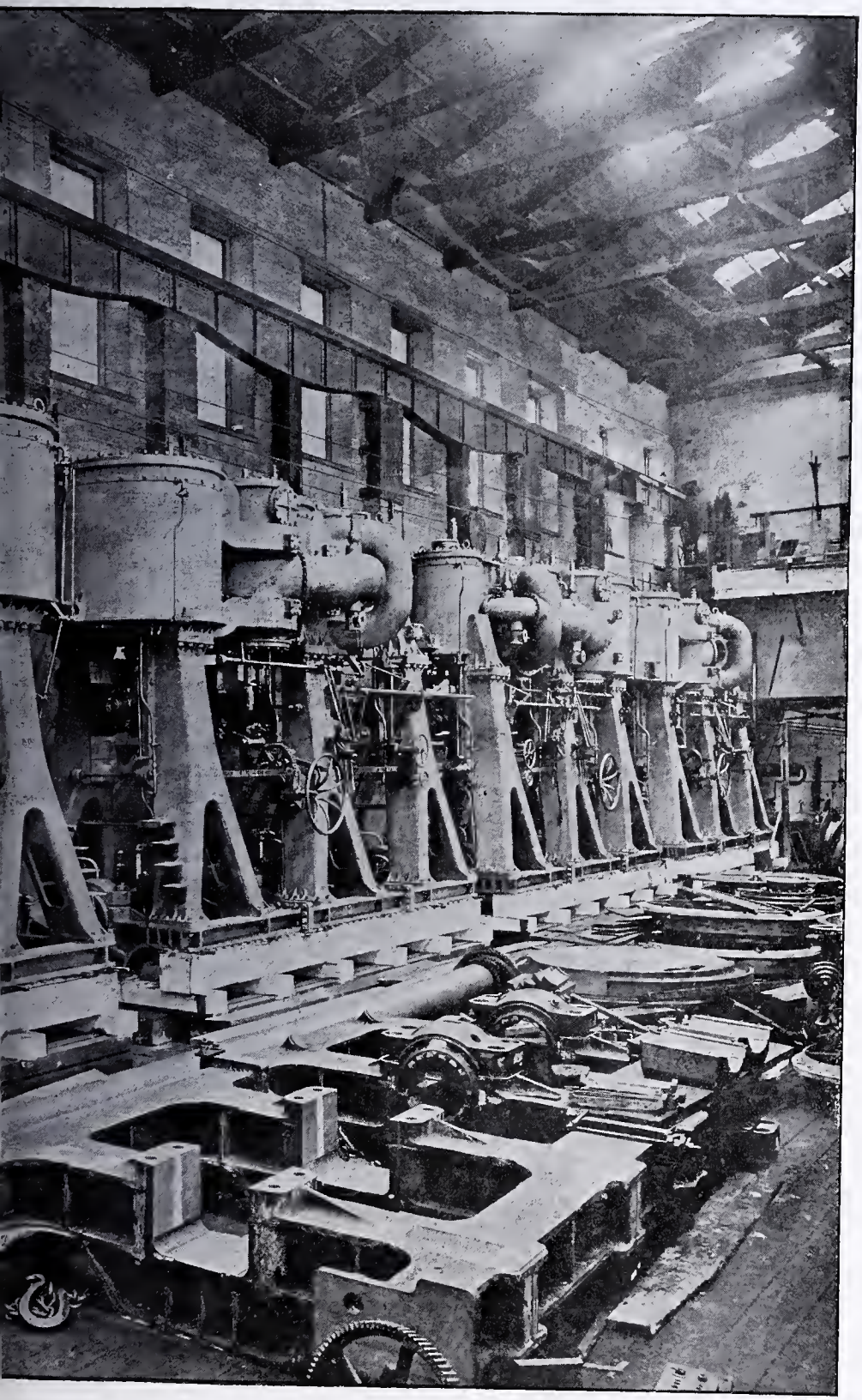
Recent improvements in material and enlargement of the capacity of the rolling mills have enabled builders to augment the size of cylindrical boilers to proportions not dreamed of a few years ago. This is not only an essential condition in the building of large and high powered ships, but it also conduces largely to economy of fuel and fire room work, as the "coefficient of performance" increases in a rapidly progressive ratio with the enlargement of the boiler.

The latest boilers completed at Cramp's ship-yard, are a set of eight double enders for the United States Protected Cruiser No. 12. They are each sixteen feet in diameter and twenty-one feet long, with four corrugated furnaces three feet four inches diameter by seven feet and eight and one-fourth inches long, having 1,456 square feet of grate surface with 48,000 square feet of heating surface. Their shells are of steel plates weighing fifty-five pounds to the square foot, or $1\frac{23}{64}$ inches thick, hydraulic machine riveted throughout, with flange and fire plates of twenty-four pounds to the square foot or $\frac{9}{16}$ inches thick, and weighing eighty tons each when ready to be placed in the ship. They are calculated for forced draught on the closed fire room plan, each pair of boilers being enclosed in an independent fire room and supplied with forced draft by sixteen centrifugal blowers. These eight boilers are expected to supply steam for about 3,000 indicated horse-power each under full forced draft, or in the neighborhood of 24,000 collectively. They are the largest boilers ever built in this country and, excepting those of the four most recent transatlantic liners, the largest in the world.

The boiler shops of Cramp's ship-yard are among the most extensive in the world. The main building is three hundred and seventy feet long by fifty-five feet wide, with a "bay" or side annex of the same length and fifty-eight feet wide. Throughout the whole length of the main building two electric cranes of fifty tons capacity each, travel with a "hoist" of forty-nine feet six inches in the clear from the floor and having a "hoist" of thirty-seven feet over the top of the hydraulic riveter, affording space for handling the shell of a boiler in the process of riveting. The side bay is provided with a similar crane of fifteen tons capacity and its space is occupied by the planing machines, drills, flanging presses and other tools. An additional annex of lesser proportions shelters the forges and steam hammers connected with the boiler plant. In present practice more than half the work on a marine boiler is done by machinery. All the planing, bending, flanging and drilling of the main plates is done by machinery and the whole of the shell is riveted up by the hydraulic riveter. Hand work is now mainly confined to the fitting and riveting of the furnaces, tube sheets and boiler heads, fitting, fastening the tubes and stay bolts, and calking the seams.



FOUR TRIPLE EXPANSION ENGI



FOR U. S. STEAMER NEW YORK.

As soon as the first consignment of shell plates is received in the yard they are planed to exact size and the plates forming the first "ring" or section of the boiler are bent to exact shape. These are then secured in place on a circular drill table and the second ring is bent and fitted to them. The rivet holes are then bored in place through and through thus insuring exact coincidence. The third ring, if a double ended boiler, is then treated in the same manner, when the plates are fastened in place by a sufficient number of bolts to hold them, and the structure is picked up by the cranes and transferred to the hydraulic riveter. This is a machine having two heavy vertical jaws with a sufficient opening between them to admit the shell of the boiler freely. One jaw carries a hydraulic cylinder and plunger, while the other holds a fixed die on the same axis as the plunger. The shell is swung between these two jaws and hot rivets handed up on the inside, each rivet hole being brought in its turn in line between the plunger and the die, and the rivet is driven home by a single impress, the force exerted being many tons to the square inch, varying according to the size and "pitch" of the rivet.

The flanging press is also a hydraulic machine. It consists of a vertical pressure cylinder actuating a plunger which is provided with cast iron dies of whatever size and shape may be needed to produce the desired flange. The plate is heated to a bright red and placed in position on the die, exact adjustment having been previously made by measurement, and the power is applied. Some flanges are produced by a single operation, while others require several impressions, according to the size of the plate and depth of the flange.

The boiler having been completed, all joints calked, tubes secured, stay-bolts set up, manhole covers fastened and pipe connections seated, it is tested under a pressure one and one-half times greater than that at which it is designed to work, and is then taken to the boiler wharf in readiness to be put in place on board ship.

In the meantime the engine has been undergoing similar progress in the machine shops, and as fast as its parts are completed they have been assembled on what is termed the "erecting floor" or platform, in the same positions they would occupy on board. In other words, the engine is completely set up in the shop and all its parts thoroughly adjusted, except the boiler pipe connections. In this operation, all the guides, piston-rod, cross-head and connecting-rod bearings are carefully centred and trued up, the crank shaft bearings are tested and perfected by means of cast iron mandrels which are fac-similes or templates of the shafts, and finally the crank shafts themselves are put in place, connected and turned over. This is one of the most delicate processes known to mechanical art, and upon the fidelity with which it is accomplished depends much of the success of the machine. No triumph can excel that of the marine engine builder, who sees the creation of his skill start off on preliminary trial without hitch or jar and from the first, realize the full performance designed or guaranteed.

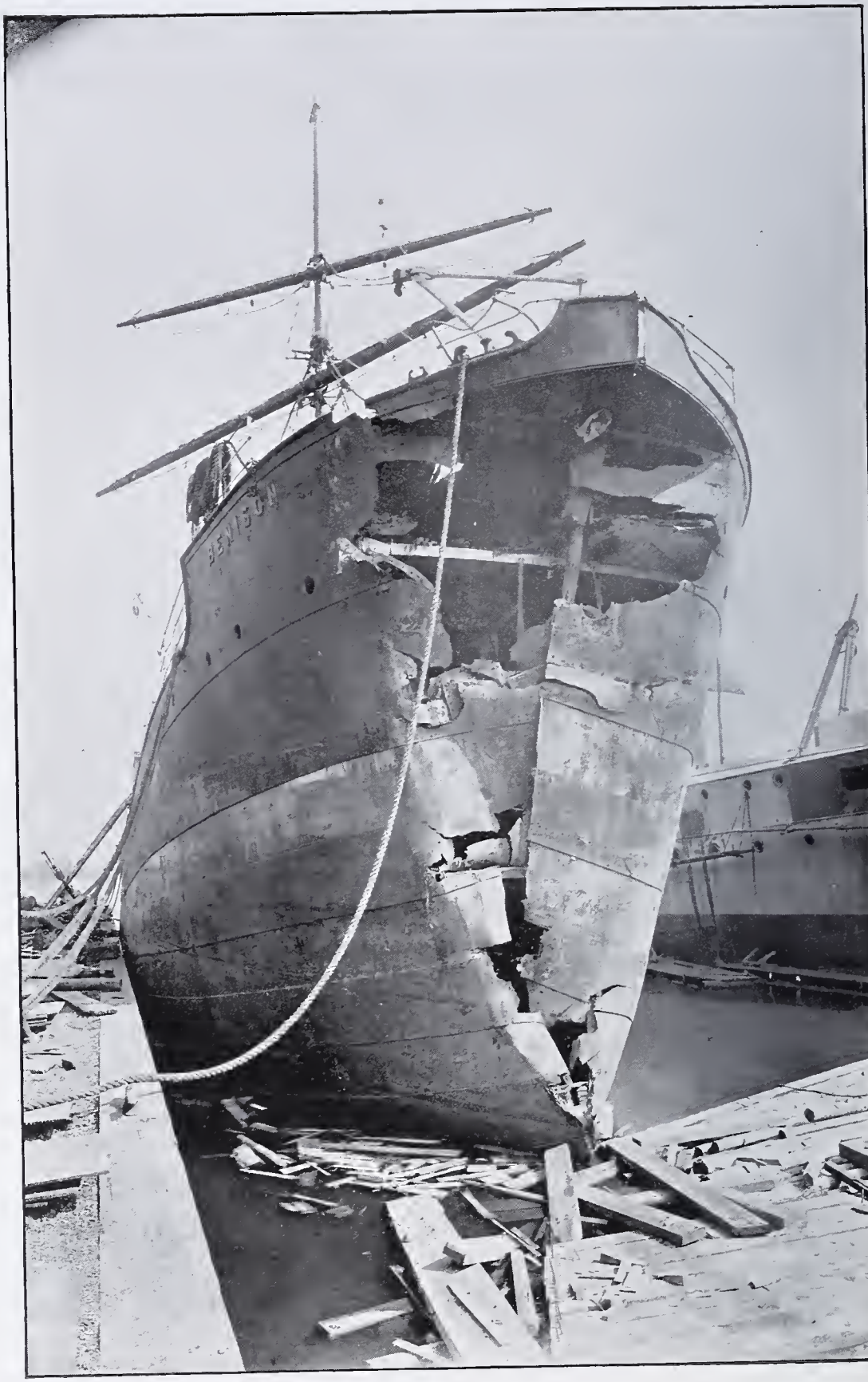
The engines are now taken apart in the shop—or "broken up," as the saying is—and transferred to their destined places in the ship, piece by piece, the boilers are put on board, secured in their saddles, the pipes are connected and the vessel is ready for what is called the "dock trial." This is a trial of the engines with the ship securely moored to the wharf, and is continued for twenty-four hours or sometimes as long as forty-eight hours, during which time the operation of every part of the machinery is carefully inspected, small defects, if any, are made good; the delivery of steam, action of the condensors, function of the pumps and valves, performance of the boilers, operation of the bearings, efficiency of lubricating apparatus—in short, every item in the sum total of the work of the machinery is closely observed and exhaustively noted.

After the dock trial nothing remains but the sea trial which, in the case of Pennsylvania built ships, is often nothing more than a trip from the ship-yard to the wharves of their owners, where they are approved, received and the balance of the contract price paid. This is the usual method with merchant steamships; but the government is more exacting.

As will have been observed by the terms of the copy of a naval contract heretofore printed, the government is not satisfied with one trial. When a naval vessel is finished and ready for trial, the department appoints a board of officers who inspect her from stem to stern, and from keelson to truck, to see if the other inspectors, who have almost watched the driving of every rivet during her construction, have done their duty. This ordeal passed, the board takes possession of the ship and she goes out of the capes for a sea trial. If the conditions of her contract require a guarantee of indicated horse-power, her engines are put at full speed for four hours, and indicator cards are taken of each end of each cylinder every fifteen minutes. When she returns to port the indicators are taken to a navy yard and tested to see if their springs have weakened any under the ordeal to which they have been subjected. The cards are then computed and the factor of decreased "weightage," which may be one one hundred thousandth of the total resistance of the spring is carefully differentiated in ratio through the sixteen cards, these are then calculated by the rule of a mean result of several means; and after some weeks the builder is officially informed that his engines have developed a certain number of units of indicated horse-power, plus certain one hundredth parts of the same. In other cases, and this is now the regular practice, the vessel is tried on a guarantee of speed in knots per hour. The contract stipulates that she shall be tried at a certain draught and displacement, which are officially termed "normal."

Hence, after the quantity of coal and stores necessary for the trial trip are on board, the vessel must be brought down to her "normal load line" by extra weights.

In placing these on board, the naval inspectors require that the equivalent of each gun with its carriage, etc., shall be located on each gun



A STEAMER INJURED BY COLLISION, WHICH IS TO BE REPAIRED.

sponson or other place of mount; the equivalent of the regular ammunition weight shall be stowed in the magazine; that of the ship's stores shall be disposed in the places between decks and that of the remaining coal supply in the bunkers, so that the relation of trial weights to the buoyancy and stability of the vessel shall, as nearly as possible, exactly conform to the conditions of actual service. The regulation limit of speed trial is now four hours, and the practice adopted by the department is to make two runs over a measured course half the distance which the vessel is required to make as a whole, the professed object being to equalize, as far as possible, the effect of tides, currents and winds which may prevail during the run.

So far as this method has been practiced, little is to be said in its favor; at least anywhere on the Atlantic coast. The water is too shallow to admit of running close enough in shore to make use of landmarks or fixed ranges, and hence recourse must be had to buoys or vessels anchored as markers, both as to the ends of the course and to indicate its line. Of course these are subject to variations which, in measuring the speed of a vessel going twenty knots an hour, or a knot in three minutes, might considerably affect the result. However, the run is made under these conditions, and after a week or two of calculation at the Navy Department, the builder is officially informed that his ship has developed a speed of a certain number of knots per hour, plus a certain number of one thousandths of a knot, which is important, as a thousandth of a knot is six feet and eight one hundredths of a foot, and a vessel going twenty knots an hour requires eighteen one hundreths of a second to traverse that distance. In view of the fact that the unequal drift of ships or buoys moored as markers either of the ends of the course or of its line, might easily affect its actual length a quarter of a knot or more, this accuracy of reporting the speed developed to thousandths of a knot would seem to be indispensable.

All the signs of the times indicate that the lead which Pennsylvania has achieved in steamship building will not only be maintained, but increased in the future. If we include Wilmington, whose industries are Pennsylvanian in everything except the accident of an imaginary line on the map, we shall find that the amount of seagoing steam tonnage built elsewhere under the American flag is not worth considering. The steel and iron steamships of the Delaware river ship-yards plow every sea where our flag is known and unless we incorrectly interpret the genius of the period in which we live, the past ship building achievements of Pennsylvania afford but a feeble index of what will be seen in the future. Of none of her vast and diversified industries has the state more reason to be proud; for, though others may involve greater capital and employ more hands for the time being, not one of them sheds so much lustre on her name or carries her fame so far among the peoples of the earth as the ship building of the Delaware.

EXPORTS.	From March 15, to December 31, 1784.	1785.	From January 1, to September 1, 1786.	From October 1, 1791, to October 1, 1792.
Apples, barrels	1,742	536	88	743
Apples, kegs	1			
Apples, casks		48		
Apples, dried, barrels		12½		
Anchovies, cases	10			
Axes	336			
Almonds, casks		2		
Alspice, hogsheads		3		
Alspice, bags		6		
Ashes, pot, tons				50
Ashes, cwt.				19
Ashes, pearl, cwt.				17
Anchors				19
Bread, barrels	14,354	23,551	9,714	31,911
Bread, kegs	23,860	22,264	8,532	12,970
Bread, cwt.	128			
Bread, hogsheads	51	19	4	
Bread, bags	540	1,498	1,162	
Bread, casks	250	1,231	31	
Bread, puncheons	56	56		
Bread, tierces	10	111		
Bread, half barrels	23	1		
Bread, tons		136		
Bread, quarter casks		100		
Bread, pounds		2,907		
Boards, feet	2,005,025	2,933,285	1,102,835	4,000
Boards, number	235,665	24,466	2,847	
Boards, plank and scantling, number		26,402		
Boards and plank, pine, feet				1,583,222
Boards and plank, oak, feet				17,120
Butter, firkins	91	264		1,541
Butter, pots	2			
Butter, kegs	106	119	191	
Butter, half barrels		14		
Beeswax, tierces	18	15		
Beeswax, casks	22	30	50	
Beeswax, barrels	111	29	92	
Beeswax, bags	23			
Beeswax, puncheons	3			
Beeswax, pipes	5	2		
Beeswax, pounds	928½			94,135
Beeswax, boxes		2	1	
Beeswax, cases		3		
Beeswax, hogsheads		25		
Beeswax, kegs		2		
Brandy, hampers	2			
Brandy, kegs	159	183	6	
Brandy, hogsheads	10		1	
Brandy, ankers	15			
Brandy, pipes	9	81	16	
Brandy, cases		20		
Brandy, half pipes			3	
Brandy, casks			9	
Bark, casks	73		8	
Bark, hogsheads	19	209	251	2,876
Bark, barrels		2	570	
Bark, tierces			14	
Bark, pipes			125	
Bark, puncheons			157	
Bark, cords				200
Brazil wood, tons	1			
Bricks	279,110	147,250	42,350	35,000
Barrels, empty	6	94		
Beer, boxes	5			
Beer, jugs	290			
Beer, barrels	11	6		
Beer, hogsheads		12	3	
Beer, casks		14		
Beer, dozen		130⅔		249
Beer, baskets			33	
Beer, tierces			2	
Beer, cider and porter, gallons				18,510
Bellows	1			
Beef, barrels	367	536	165	3,205
Beef, buckets	6			
Beef, half barrels	49	52	1	
Beef, tierces	6	6		
Beef, kegs	10	40		
Beef, tubs	90	119	81	
Beef, rounds	55	39		
Buckskins, hogsheads	1			
Buckskins, loose	64			
Brittanias, bales	8			
Brittanias, pieces	50			

EXPORTS.	From March 15, to December 31, 1784.	1785.	From January 1, to September 1, 1786.	From October 1, 1791, to October 1, 1792.
Brimstone, boxes,	18			
Brimstone, barrels,			6	
Boards and scantling, feet,	178,811			
Boxwood, tons,	2			
Boxwood, pieces,		278		
Boat, frames,	14			
Boats,		5		
Bran, hogsheads,	10			
Bran, bushels,				26
Buckwheat, barrels,	1	3		
Buckwheat, bushels,				211
Barrows,	10			6
Beans, barrels,		1		
Braziletto, tons,			87	17
Braziletto, cwt.,		22		
Braziletto, cases,		14		
Braziletto, pounds,		200	3,739	
Barley, kegs,		2		
Bacon, tierces,			4	
Boots, pairs,				20
Buckets,				233
Bedsteads,				13
Bridles,				18
Blocks,				550
Cocoa, hogsheads,	16			
Cocoa, barrels,	63			
Cocoa, bags,	43			
Cocoa, casks,	4			
Cocoa shells, hogsheads,		7		
Corn-meal, hogsheads,	226	685	785	
Corn-meal, puncheons,	148	128	6	
Corn-meal, casks,	4			
Corn-meal, barrels,		5,932	4,111	34,335
Carriages,	3			29
Carriages and harness,			1	
Candles, boxes,	179	234		107
Candles, barrels,	2		279	
Candles, tallow, pounds,				225
Corn, bushels,	38,914	117,931½	36,338½	414,262
Corn barrels,	1,298	656	798	
Corn, bags,	142	176	164	
Corn, hogsheads,	652	2,134	850	
Corn, casks,	51			
Corn, puncheons,	637	1,256	304	
Corn, pipes,	1			
Corn, tierces,	7	172	11	
Cider, casks,	12	4	3	
Cider, barrels,	258	90		
Cider, hogsheads,	6			
Cider, tierces,		1		
Cider, kegs,		1		
Cider, boxes,			536	
Chairs, number,	1,125	678	1,243	356
Coal, bushels,	400	120		25
Coal, tons,	40	15		
Cutlery, barrels,	1			
Cutlery, cases,			1	
Coffee, barrels,	34			
Coffee, hogsheads,	6	1		
Coffee, bags,	2			
Coffee, tierces,	1	4		
Coffee, pounds,		300		1,001,187
Coffee mills,			24	
Cedar posts,	128	88		
Cordage, pounds,	26,000	42,872		
Cordage, tons,	4¼			
Cordage, coils,	158	59		
Cordage, hogsheads,	1			
Cordage, cwt.,				170
Cotton, bags,	27	19		
Cotton, bales,	20			
Cotton, pounds,				20,000
Copper, cakes,	534			
Copper, cwt.,	24			
Copperware, casks,	1			
Copperkettles,	5			
Chocolate, boxes,	17	8	20	
Chocolate, pounds,				940
Crockeryware, cases,	4			
Crockeryware, crates,	8			
Cables,	2			
Cases, empty,	4			
Cherries, preserved, barrels,	1			
Checkers, boxes,	1			

EXPORTS.	From March 15, to December 31, 1784.	1785.	From January 1 to September 1, 1786.	From October 1, 1791, to October 1, 1792.
Canvas, bolts.	10	60		
Canvas, bales,	10			
Cheese, barrels.	2			
Cheese, number,	20			
Cheese, pounds.	1,000			15,240
Cabbages, number,	200			
Corn and Oats, puncheons,	12			
Checks, boxes,	2			
Carts,		1		
Currants, barrels,		11	53	
Currants, hoxes,			16	
Currants, jars.		10		
Currants, hogsheads,			7	
Candy, kegs,		2		
Canes, hundles,		3		
Cranberries, casks.		2		
Cranberries, bushels.				54
Cranberries, barrels.		12		
Cranberries, kegs.		7		
Cranberries, boxes.		3		
Chalk, pounds.			1,100	
Cordials, boxes.			21	
Coats.			42	
Casks, empty.			400	
Clocks, cases.			2	
Cannon,				16
Cattle,				70
Corn, fans,				1
Deer skins, number.	43			
Deer skins, bundles,	5			
Deer skins, pounds,				4,881
Deer skins, packages,				162
Dry goods, packages,	62	13	1	
Dry goods, bales,	107	60	71	
Dry goods, trunks,	1	2	10	
Dry goods, hoxes.		7		
Dry goods, cases.		1		
Dry goods, pieces.		471		
Dry goods, tierces,		1		
Dry goods, barrels.		2	2	
Dray and harness,	1	1		
Dye-wood, pieces,	44			
Dye-wood, hogsheads.	4	154		
Dye-wood, tierces.	1			
Dye-stuff, barrels,			20	
Dye-stuff, tons,				160.10
Drugs, casks.	3	3		
Dutch ovens,		240		
Earthenware, hogsheads,	5	6		
Earthenware, crates,	36	3		5
Earthenware, lots.	2			
Earthenware, casks,	5			
Earthenware, barrels,		3		
Engines,				1
Ebony, cwt.,	15			
Ebony, tons.		7		
Eggs, barrels,		19		
Essence of spruce, boxes.		16		
Flour, barrels,	126,691	156,983	66,501	347,742
Flour, half barrels,	2,227	1,686	2,568	
Furs, hogsheads,	5	36	6	
Furs, cases.	1	8	1	
Furs, boxes.	1	1		
Furs, tierces,	1	5		
Furs, bales.		1		
Furs, puncheons,			3	
Furs, casks.			1	
Furs, barrels,			1	
Fish, barrels.	2,977	3,658	2,211	1,613
Fish, kegs,	36	334	79	
Fish, casks.	33			
Fish, pounds.	6,100			
Fish, hogsheads,	128	236	94	
Fish, bundles.	1	45		
Fish, quintals,	471		44	369
Fish, number,	94			
Fish, half barrels.		9	1	
Fish, half tierces.		3		
Fish, tubs,			1	
Flaxseed, barrels.	146	129		
Flaxseed, hogsheads.	6,091	7,060	1,103	
Flaxseed, half hogsheads,	351	248		
Flaxseed, casks,	1,654	5	22	10,150
Flaxseed, half casks,	41		1	

EXPORTS.	From March 15 to December 31, 1784.	1785.	From January 1 to September 1, 1786.	From October 1, 1791, to October 1, 1792.
Flaxseed, tierces,	571			
Flaxseed, bags,	97			
Flaxseed, puncheons,		3		
Fans,	6	2	16	
Fustic, tons,	31½	156		
Fustic, cwt.,	23			
Fustic, logs,	83			
Fustic, pounds,		304	312	
Fustic, pieces,			368	
Furniture, lots,	16	2		
Furniture, casks,			6	
Fruit, barrels,	23	26		
Fruit, dried, boxes,			2	
Fowls, number,		374		
Fusees,			30	
Frames of houses,				4
Gin, cases,	543	104		
Gin, baskets,	20			
Grindstones, number,	120		30	24
Ginger, bags,	83	19		
Ginger, barrels,		4		
Gammons, barrels,	88			
Gammons, tierces,	7	20	8	
Gammons, casks,	2			
Gammons, number,	487			
Gammons, pounds,		2,000		
Ginseng, barrels,	27	13½	26	
Ginseng, bales,	1			
Ginseng, boxes,	4			
Ginseng, hogsheads,	23	41		
Ginseng, pounds,	712	226		4,751
Ginseng, casks,	23	20	5	
Ginseng, tierces,	1	2		
Ginseng, bags,	4			
Ginseng, cases,		1		
Ginseng, puncheons,			1	
Guns, number,	2			
Guns, barrels, cases,		3		
Gimang, barrels,	33			
Gimang, casks,	2			
Gunpowder, casks,	8			
Gunpowder, quarter casks,				56
Gunpowder, barrels,	4	4		
Geneva, cases,		85		
Geneva, casks,		85		
Glass, barrels,		2		
Glassware, chests,			9	
Gum-wood, pieces,			3	
Hardware, crates,	3			
Hardware, casks,		1		
Handspikes, number,	678	3,747		7,840
Headings, number,	167,218	75,319	21,570	
Headings, puncheons,		4		
Headings, hogsheads,			6	
Hoops, number,	93,682	70,890	37,100	
Hoops, bundles,	279	381	97	
Hoops, hogsheads,		4		
Hoops, setts,		29		
Hoops and poles,				84,460
Hair-powder, boxes,	3		40	
Hair-powder, barrels,		15	6	
Hair-powder, pounds,				990
Hams, casks,	19	47	53	
Hams, barrels,	17	26	48	
Hams, tierces,	2	48	34	
Hams, hogsheads,		21	3	
Hams, number,		24	30	
Hams, puncheons,			10	
Hams, tubs,			60	
Hams and bacon, pounds,				305,230
Horses, number,	6	2	1	12
Hogsheads, empty,	80			
Hawsers and cables,	8			
Hoes, trunks,	1			
Handkerchiefs, dozens,	60		10	
Handkerchiefs, boxes,	1			
Harness, pieces,	13			
Harness, hogsheads,		1		
Harness, tierces,		1		
Hogs, number,		50		27
Horn-tips, hogsheads,		2		
Horn-tips, barrels,		2	6	
Horn-tips, number,				6,200
Horns, hogsheads,			1	

EXPORTS.	From March 15, to December 31, 1784.	1785.	From January 1, to September 1, 1786.	From October 1, 1791, to October 1, 1792.
Hosiery, bales,		1		
Hooks and lines, casks,		1		
Hats, casks,			1	
Hats, number,				2,606
Hay, tons,			30	208
Hay, bundles,			2	
Hides, raw, pounds,				900
Honey, gallons,				120
Iron, tons,	107½	159	120	
Iron, bars, number,	270	166	311	
Iron, pigs, number,	372			
Iron, cwt.,	422	524		
Iron, pots, number,	22			
Iron faggots,	2			
Iron, lots,	50			
Iron rods,	60			
Iron, cases,		1		
Iron, pounds,		67	856	
Iron hoops, number,		1,000		
Iron ware, tons,			2	
Iron, pig, tons,				797
Iron bar, tons,				21
Iron hoops, tons,				7
Iron hoops, cwt.,				11
Ironmongery, tierces,	1	1		
Ironmongery, casks,	11			
Ironmongery, boxes,	1	1		
Indigo, kegs,	1			
Indigo, casks,		32	23	
Indigo, barrels,		21	14	
Indigo, half barrels,		1		
Indigo, half casks,			4	
Indigo, tierces,			7	
Indigo, boxes,			2	
Indigo, pounds,				2,668
Ivory teeth, number,		15		
Ivory, chests,			1	
Junk, lots,		1		
Julap, bales,		20		
Jack-screws, number,			5	
Knockdowns, number,	2,771	349	100	
Knockdowns, bundles,			74	
Knees, cedar, number,		1,896		
Knees, number,			36	
Lumber, feet,	291,907	163,527	205,000	
Liquor, cases,	1			
Liquor, boxes,		19		
Lime-juice, barrels,	3			
Logwood, tons,	158	167	121	
Logwood, bags,	10			
Logwood, cwt.,	15	37		
Logwood, pieces,		15,510		
Logwood, pounds,			1,117	
Lignum vitæ, tons,	380	111½	33	10
Lignum, pieces,	135	960	1,324	
Lignum, pounds,	317	1,673		
Lignum, cwt.,			34	
Linen, bales,	2			
Linen, pieces,	17			
Linen, chests,	1			
Linen, boxes,	4	2		
Linen, cases,		3		
Lard, firkins,	140	76		
Lard, casks,	72		13	
Lard, kegs,	52	391	227	
Lard, barrels,		28	4	
Lard, pounds,				88,640
Lime, hogsheads,	6			
Lime, bushels,				96
Lead, tons,	25			
Lead, cwt.,	8			
Lead, casks,	3			
Lead, rolls,		3		
Leather, bundles,	1			
Leather, pounds,				1,650
Line, bundles,	6			
Laths, number,		5,000		
Locks, boxes,		1		
Lampblack, cases,		1		
Molasses, puncheons,	4			
Molasses, hogsheads,	15	88	44	
Molasses, casks,		25		
Molasses, gallons,				1,000
Merchandise, packages,	3,243½	2,359	376	746

EXPORTS.	From March 15, to December 31, 1784.	1785.	From January 1, to September 1, 1786.	From October 1, 1791, to October 1, 1792.
Middlings, barrels,	1,481	3,652	952	
Middlings, half barrels,	35			
Mahogany, pieces,	1,636	4,537	584	
Mahogany, feet,	3,027	19,103		
Miserables, hogsheads,	4			
Metal-pot, tons,	1			
Muskets, boxes,	4			
Muskets, number,		57		
Muskets, cases,			4	
Masts and spars, number,	12			
Masts, number,		20		
Mats, number,		98		
Mustard, boxes,		2	12	
Mustard, pounds,				120
Mint-oil, boxes,		1		
Marble, boxes,			1	
Marble, slab,		1		
Nails, barrels,	34	6		
Nails, pounds,	120			
Nails, casks,	76	25		40
Nails, kegs,		5	24	
Naval-stores, barrels,	1,884	18,032	8,009	
Nuts, kegs,	6			
Nuts, barrels,	27	116		
Nuts, casks,	7			
Nuts, bushels,	7			
Nicaragua wood, pieces,			284	
Onions, bunches,	43,728	42,536	10,337	
Onions, barrels,	192	242	5	
Onions, bushels,	150	135½	497	8,805
Onions, casks,	20			
Onions, tierces,		2		
Onions, hogsheads,		11		
Onions, puncheons,		7		
Onions, half barrels,			12	
Oil, barrels,	79	17	34	
Oil, casks,	12		55	
Oil, cases,	30		13	
Oil, jars,		2		
Oil, tierces,		9		
Oil, half barrels,			9	
Oil, kegs,			10	
Oil, sassafras, barrels,			2	
Oil, whale, gallons,				50,970
Oil, sperm, gallons,				285
Oars, numbers,	4,513	1,826	520	
Oars, feet,	9,618			
Oars and oar rafters, number,				577
Oat-meal, casks,	8			
Oat-meal, barrels,		6		
Oat-meal, tierces,		2		
Oats, barrels,	10		30	
Oats, puncheons,	26	105	9	
Oats, hogsheads,	195	210	100	7,018
Oats, bushels,	310	150		
Oats, casks,		6		
Oats, bags,		183		
Oxen, number,		10		
Oysters, cases,		1		
Oysters, kegs,		11	16	
Ox-bows, number,		204		
Olives, boxes,			25	
Planks, number,	14,257	2,437		
Planks, feet,	273,686	35,806	9,449	
Pork, barrels,	525	1,350	888	4,461
Pork, half barrels,	1	2	20	
Pork, tierces,		7		
Pork, casks,			4	
Porter and beer, casks,	15			
Porter and beer, barrels,	50			
Porter, barrels,	14		1	
Porter, hogsheads,	180	14		
Porter, tierces,		5	12	
Porter, bottled, dozen,		21		
Pipes, boxes,	28			30
Pimento, casks,	2			
Pimento, hogsheads,	22			
Pimento, tierces,	1			
Pimento, bags,	6	127		
Pimento, pounds,	100			48,750
Pimento, barrels,		54		
Pimento, bales,		75		
Pimento, kegs,		1		
Pimento, cases,			17	

EXPORTS.	From March 15, to December 15, 1784.	1785.	From January 1, to September 1, 1786	From October 1, 1791, to October 1, 1792.
Pitch, barrels	3,772	1,674	821	462
Pitch, casks	57	25		
Pitch and tar, barrels	360		557	
Ploughs, number	31		1	
Plough shares, number	24			
Pepper, hogsheads	4			
Pepper, pounds	8,000			2,440
Pepper, kegs		1		
Pepper, bags			16	
Potatoes, barrels	953	1,083	236	
Potatoes, bushels	821	133	100	3,007
Potatoes, hogsheads	13	25		
Potatoes, puncheons	11			
Pitch and turpentine, barrels	40			
Peas, kegs	10			
Peas, barrels		87	295	
Peas, hogsheads		32	12	
Peas and beans, bushels				13,128
Peas and beans, casks	16			
Paint, casks	2			
Paint, hogsheads		4		
Paint, barrels		4		
Paint, kegs		5		210
Paint, boxes		1		
Pewter, casks	1			
Paper, bundles	8			
Poultry, coops	2			
Poultry, dozens				10
Pork and beef, barrels	6			
Potash, barrels	30	138	7	
Potash, casks		49		
Pearlash, casks	8			
Pearlash, hogsheads		6		
Puncheons, empty, number		154		
Pickles, kegs		37		
Phaetons			1	
Pinkroot, pounds				1,000
Pots, kettles and castings, number				70
Porcelain or china, chests				1
Queensware, crates		19		
Queensware, hogsheads			10	
Queensware, casks			1	
Rosin, barrels	119	130	494	106
Rice, tierces	527	4,082	2,441	6,720
Rice, casks	490	207	250	
Rice, barrels	40	33	23	
Rice, half barrels	22	16	9	
Rice, half tierces		60	104	
Rice, bushels		400		
Rice, hogsheads		28	140	
Rum, puncheons	614	251	32½	
Rum, hogsheads	197	128	77	
Rum, barrels	3	8		
Rum, casks	2	36	8	
Rum, kegs	9			
Rum, tierces		47		
Raisins, packages	720			
Raisins, pounds				3,700
Rye, bushels	60			1,083
Rye, barrels		176		
Rye meal, barrels	54	415	289	2,648
Rattan, pounds		3,150		
Redwood, tons			12	
Redwood, pounds			1,076	
Staves, not specified	2,117,740	2,122,477	1,346,456	
Staves, barrel	625,605	707,570	231,300	
Staves, hogshead	371,367	35,930	7,700	
Staves, pipe	221,206	168,160	45,876	
Staves and headings	180,135	1,064,078	148,999	2,814,634
Shingles	9,407,745	5,149,725	2,029,850	2,789,173
Shingles, bundles	3,952	2,394	231	
Sugar, hogsheads	460	182		
Sugar, tierces	239	46		
Sugar, barrels	434	68		
Sugar, casks	24	14		
Sugar, boxes	220	11	20	
Sugar, brown, pounds				123,340
Sugar, loaf, pounds				12,550
Sugar, other, pounds				740
Slate, boxes	20			
Slate, number		21,000		
Sturgeon, boxes	41			
Stoves, number	25	10		

EXPORTS.	From March 15 to December 31, 1784.	1785.	From January 1, to September 1, 1786.	From October 1, 1791, to October 1, 1792
Spirits, hogsheads,	4			
Spirits, country-made, gallons,				53,702
Spirits, foreign-distilled, gallons,				12,755
Seeds, boxes,	1	18	1	
Seeds, bundles,		1		
Seeds, garden, boxes,				20
Scantling, feet,	729,534	92,605	136,829	51,814
Scantling, pieces,	2,493	1,349	268	
Snuff, hogsheads,	1	6	10	
Snuff, barrels,	217	17	6	
Snuff, bottles,	6			
Snuff, kegs,	13	33		
Snuff, boxes,	16	1		
Snuff, tierces,			1	
Snuff, pounds,				4,650
Starch, barrels,	54	14		
Starch, kegs,	16			
Starch, cases,			27	
Starch, pounds,				3,920
Spars, number,	381	6	110	9
Soap, barrels,	10			
Soap, boxes,	79	312	158	292
Soap and candles, boxes,		5		
Scale beams,	3			
Ship-stuff, barrels,	619	2,247	977	3,700
Ship-stuff, hogsheads,	108	13		
Ship-stuff, tierces,			4	
Sassafras, hogsheads,	1			
Sassafras, casks,	2	20		
Sassafras, tons,		83	6	
Sassafras, tierces,		1		
Sassafras, boxes,		1		
Sassafras, pounds,		16,554	3,906	
Sassafras, barrels,		14	3	
Sassafras, lots,		2		
Stills, number,	6			
Shoes, boxes,	1			
Shoes, pairs,			72	1,042
Spikes, pounds,	490			
Spikes, kegs,			9	
Shooks, number,	621	4,197	1,435	
Settees, number,	4	5	2	10
Sweeps, number,	19			
Snake root, cases,	1			
Snake root, casks,	13	6	21	
Snake root, barrels,		15	23	
Snake root, puncheons,		1		
Snake root, bags,		1		
Snake root, boxes,			1	
Snake root, pounds,				5,300
Spermacetti, pounds,	2584			
Spermacetti, boxes,			2	
Sheep, number,	87			110
Shot, cwt.,	10			
Shot, casks,	1			
Shot, number,				740
Shot, pounds,				1,500
Sashes and glass, cases,	2			
Saws, boxes,	2	1		
Steel, bars,	16			
Sarsaparilla, casks,	1	5		
Sarsaparilla, packages,		3		
Sarsaparilla, barrels,		15		
Sarsaparilla, bags,		14		
Skins, cases,	2	35	19	
Skins, bundles,		11	3	
Skins, hogsheads,		85	151	
Skins, tierces,		2	1	
Skins, boxes,		4		
Skins, casks,		5	9	
Skins, barrels,		3		
Skins, puncheons,		34	16	
Skins, bales,			7	
Seal skins, value,				$14,536
Skins and furs, packages,				337
Sulkey,	1			
Senna, tierces,		2		
Senna, bags,		6		
Sail-needles, number,		100		
Salt-bushels,		100		350
Stone, cases,		3		
Stone, number,		6		
Sieves, number,		5		

EXPORTS.	From March 15, to December 31, 1784.	1785.	From January 1, to September 1, 1786.	From October 1, 1791, to October 1, 1792.
Shirts, casks,			1	
Shakes, number.			207	2,065
Sofas, number,				2
Saddles, number,				63
Spokes and felloes, dozens,				88
Spinning-wheels, number,				37
Timber, pieces,	2,133	794	804	4,477
Timber, tons,	285½		11	40
Timber, feet,	15,331			
Turpentine, barrels,	6,761	1,505	887	7,140
Turpentine, jugs,	8			
Turpentine, tierces,	175			
Turpentine, casks,		78		
Turpentine, hogsheads,		2		
Tea, boxes,	4		12	
Tea, half chests,	4			
Tea, chests,		91	148	81½
Tea, quarter chests,		7	3	
Tea, pounds,		25		
Tar, barrels,	6,394	2,426	1,128	5,889
Tobacco, hogsheads,	8,527⅓	4,641	3,471	3,203
Tobacco, barrels,	31	189	1	
Tobacco, casks,	98	25	5	
Tobacco, bags,	15			
Tobacco, cases,	1	8		
Tobacco, tierces,	13	1		
Tobacco, pounds,	966			
Tobacco, kegs,	2	3		
Tobacco, puncheons,		1		
Tobacco, boxes,		7		
Tobacco, rolls,		2		
Tobacco, half barrels,			1	
Tobacco manufactured, pounds,				2,140
Tobacco stems, barrels,			7,150	
Tubs, nests,	17	9		
Tubs, number,	18			
Tallow, casks,	3			
Tallow, kegs,	30			
Turnips, bushels,	200			
Turnips, barrels,	10	1		
Taffia, hogsheads,	20			
Taffia, tierces,	10			
Tins, casks,		10		
Tongues, kegs,		3		
Tongues, barrels,		2		
Twine, pounds,		50		
Twine, hogsheads,			2	
Treenails, number,		25,695		2,000
Tiles, number,		6,550		
Trunks, number,		1		
Tombstones, number,			1	
Tables, number,				9
Vinegar, hogsheads,	4			
Vinegar, casks,	1	2		
Vinegar, barrels,		2		
Vinegar, gallons,				420
Vise,	1			
Vegetables, barrels,	200			
Vats,	15			
Varnish, kegs,		3		
Wine, boxes,	124			
Wine, hogsheads,	103	9	12	
Wine, cases,	85	7	5	
Wine, pipes,	38	67	6	
Wine, tierces,	9			
Wine, casks,	3		11	
Wine, quarter casks,	201	31	22	
Wine, chests,	3	84		
Wine, hampers,	31			
Wine, butts,		2		
Wine Madeira, gallons,				3,810
Wine, other, gallons,				12,044
Wine, bottled, dozens,				359
Wheat, bushels,	17,688	23,971	31,791½	130,723
Wheat, barrels,		4		
Wheat, bags,		3⅓	4	
Wheat, boxes,		1		
Whalebone, pounds,	1,000			26,997
Walnut, pieces,	73	13		
Wagons,	1	2	1	
Wagon gears, number,				150
Washington, George, picture of,	1			
Wheel-timber, setts,		5,301		
Wheel-timber, pieces,		9,284		

EXPORTS.	From March 15, to December 31, 1784.	1785.	From January 1, to September 1, 1786.	From October 1, 1791, to October 1, 1792.
Wagon wheels, number,	. . . . .	12	21	. . . . .
Wheelbarrows,	. . . . .	2	. . . . .	. . . . .
White-lead. kegs,	. . . . .	119	21	. . . . .
Wood, cords,	. . . . .	. . . . .	. . . . .	82
Yellowwood, pieces,	4	. . . . .	. . . . .	. . . . .
Yokes and bows. setts,	. . . . .	. . . . .	. . . . .	17

	From July 1 to October 1, 1804.	1807.	1809.	1810.	1811.	1812.	1813.	1814.
Apples, barrels,	....	632	690	3,094	613	....	10	92
Apples, bushels,	....	....	....	....	....	....	....	....
Ale, bottled, dozen,	....	50	44	....	....	....	....	....
Ale, gallons,	....	....	20,800	....	....	....	....	....
Beef, barrels,	919	3,387	3,040	3,290	3,460	557	71	15
Butter, pounds,	228,785	684,252	432,619	475,350	662,847	....	11,920	5,064
Boots, pairs,	....	946	1,098	816	554	....	....	....
Barley, busbels,	....	160	195	392	2,673	37	....	....
Barley, kegs,	....	1	....	....	....	72	....	....
Boards, fect,	348,263	1,473,651	601,674	565,000	717,000	....	81,500	....
Bread, barrels,	1,014	7,322	3,977	5,863	9,760	2,975½	354	621
Bread, kegs,	3,588	14,550	11,381	17,370	13,944	1,771	....	....
Buckwheat, bushels,	....	54	....	3	....	....	....	....
Beer, gallons,	8,030	11,882	....	....	17,660	....	....	....
Beer, bottled, dozen,	....	....	....	....	18,510	....	....	....
Beer and cider, gallons,	....	51,690	5,168	55,560	....	....	....	....
Beer and cider, dozen,	....	2,924	881	13,266	....	....	....	....
Bark, hogsheads,	....	401	....	....	....	523	....	....
Bark, tierces,	....	368	....	....	....	19	....	....
Bark, barrels,	....	256	....	....	....	497½	....	....
Bark, value,	$7,808	....	....	....	....	....	....	$37,233
Beeswax, pounds,	8,135	65,972	134,106	36,630	32,786	....	70	....
Beaus, bushels,	....	2,102	1,988	1,620	6,098	442	....	....
Bricks,	71,000	75,000	....	15,000	17,000	....	....	....
Corn, bushels,	85,366	183,516	131,715	197,020	486,197	2,932	1,890	....
Corn meal, barrels,	17,512	66,271	36,080	43,261	108,538	22,595	886	715
Cheese, pounds,	10,327	154,851	115,580	140,042	95,740	....	11,530	18,750
Carriages, etc., value,	....	....	$1,260	$5,519	$2,328	....	....	....
Candles, tallow, pounds,	61,625	218,761	168,382	91,975	107,920	....	5,050	1,640
Candles, sperm, pounds,	9,147	6,184	9,203	25,795	3,320	....	....	....
Candles, wax, pounds,	....	....	900	7,365	....	....	....	....
Chairs, number,	....	1,795	504	....	....	....	....	....
Cordage, cwt.,	....	7½	4,877	....	....	....	....	....
Cordage and cables, cwt.,	74	....	....	3,650	4,638	....	....	....
Cotton, pounds,	725,496	1,995,154	8,483,427	5,905,448	1,907,960	....	1,248,487	....
Copper stills, number,	....	6	2	....	....	....	....	....
Copper, manufactures of, value,	....	....	$9,715	$1,350	....	....	....	....
Cider, bottled, dozen,	....	103	3,471	300	51	....	....	....
Cider, gallons,	....	....	12,452	....	....	....	700	....
Chocolate, pounds,	....	500	880	1,350	....	....	....	....
Cattle, number,	....	....	1	....	....	....	....	....
Castings, value,	....	....	....	....	....	....	....	....
Dye woods, value,	....	....	$14,294	$44,476	$70,929	....	....	....
Drugs, medicinal, value,	....	....	$3,762	....	....	....	....	....
Flour, barrels,	42,423	298,572	245,978	186,392	282,974	341,456	133,616	24,153
Fish, dry, quintals,	2,757	11,454	2,933	2,615	2,537	....	2,716	13
Fish, pickled, barrels,	1,264	3,358	759	1,531	1,410	....	....	....
Fish, pickled, kegs,	....	876	....	....	....	....	....	....
Furniture, value,	....	....	$34,142	$38,162	$27,892	....	....	....
Flax, pounds,	....	....	6,675	1,705	....	....	....	....
Flaxseed, bushels,	....	66,605	74,666	53,050	40,489	137	23,111	....
Flaxseed, casks,	....	13	....	....	....	6,168	....	....
Furs, value,	....	....	....	....	....	....	....	....
Gunpowder, pounds,	56,252	400	19,540	33,564	200	....	....	....
Ginseng, pounds,	19,028	269,408	266,204	235,296	285,136	....	....	....
Gold and silver coin, value,	....	....	....	....	....	....	....	....
Grain pulse, value,	....	....	....	....	....	....	....	....
Hams, pounds,	39,979	377,064	....	....	....	5,488	....	....
Hams and bacon, pounds,	....	....	258,523	325,742	247,484	....	....	....
Hats, packages,	....	193	5	....	....	....	....	....
Hats, value,	....	....	$24,197	$16,681	$29,830	$225	....	$770
Hoops, number,	104,510	287,530	199,485	173,000	85,000	18,500	....	64,500
Horses, number,	....	....	....	2	56	....	....	....
Hops, pounds,	....	....	....	....	....	....	....	....
Hair powder, pounds,	....	1,330	1,030	....	....	....	....	....
Hides, number,	....	....	....	....	....	....	....	....

1804.

Rosin and pitch, barrels,	316
Tar and turpentine,	579

1807.

Axletrees, number	32
Axes, number,	50
Bark, casks,	22
Bark, cords,	16
Bark, boxes,	1
Brandy, peach, gallons,	10 260
Books, cases,	2
Brass castings,	1
Boat,	1
Breeches, leatber, hogsheads,	30
Cheese, casks,	11
Cheese, boxes,	1

1807.

Cordials, gallons,	2,606
Carriages, number,	8
Cordage, coils,	411
Copper paus, number,	3
Copper, sundry lots,	2
Chestnuts, tierces,	2
Chestnuts, barrels,	8
Coal, bushels,	6,2498
Carts, number,	8
Clay, barrels,	3
Drays, number,	4
Furniture, lots,	68
Flaxseed, tierces,	10
Grindstones, number,	250
Gin, gallons,	8,534
Hogsheads, empty, number,	10
Handspikes, number,	96

1807.

Hominy, barrels,	½
Harness, packages,	5
Hay, tons,	1½
Iron hoops tons,	3
Iron rods, tons,	5
Iron hollowware, tons,	2
Iron rollers, number,	3
Iron, sundry lots, number,	17
Iron bars, number,	50
Iron cabooses, number,	3
Iron, wrought, bundles,	2
Iron rivets, kegs,	1
Iron castings, number,	212
Lime, barrels,	80
Merchandise, lots,	183
Marble, boxes,	1
Oil, neatsfoot, jugs,	12
Oars, number,	107

1815.	1816.	1817	1818	1819.	1820.	1821.	1822.	1823.	1824.	1825.	From January 1 to July 1, 1826.
. . . .	1,854	17,207	2,596	. . . .	7,323	7,664	. . . .	. . . .	1,366	572	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	6,909	6,845	4,770	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	302	. . . .	. . . .
1,552	892	684	1,920	5,126	5,520	3,981	3,456	3,157	5,097	6,528	2,387
223,149	64,920	179,880	123,235	285,728	264,172	194,942	102,139	247,927	375,135	204,061	99,312
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	907	1,130	2,560	1,709	1,722	1,322
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	198,127	312,500	133,100	583,426	1,167,012	426,000
9,354	3,230	4,911	6,986	4,664	4,278	6,281	5,310	5,686	4,655	12,603	3,049
8,606	28,532	33,990	24,004	28,132	16,074	6,239	8,161	7,692	10,453	8,163	6,818
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	35	. . . .	. . . .	. . . .
. . . .	16,632	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	4,202	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	3,200	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
$180,911	$184,443	$119,856	$114,622	$68,495	$51,754	$81,941	$85,858	$65,156	$54,386	$75,100	$18,798
74,460	15,608	7,786	16,300	730	11,664	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
282,790	138,004	52,252	396,517	119,268	61,089	126,026	63,190	88,732	105,697	74,147	16,932
46,029	34,310	42,696	37,488	59,934	48,389	46,376	44,221	44,624	51,236	37,039	1,804
75,286	48,776	60,784	50,920	. . . .	45,394	92,387	47,140	. . . .	98,833	124,798	31,021
. . . .	$2,079	$6,762	$10,299	$3,977	$2,625	$4,395	$5,176	$1,681	$5,788	$6,861	. . . .
70,826	26,485	42,525	79,625	51,565	166,572	139,808	79,976	143,697	113,039	176,349	419,250
. . . .	. . . .	4,174	13,912	3,975	16,196	31,824	31,559	73,390	52,370	33,362	42,122
. . . .	2,648	2,904	4,652	900	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
. . . .	. . . .	. . . .	6,773	. . . .	. . . .	. . . .	. . . .	. . . .	184	. . . .	. . . .
1,205	330	1,268	. . . .	275	. . . .	169	273	215	. . . .	. . . .	. . . .
4,838,427	1,678,628	2,737,180	1,886,256	977,705	1,041,459	2,198,050	4,312,287	3,105,568	659,118	1,365,530	383,154
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	$951	$5,340	$2,510	$255	$1,021	$12,334
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	83	. . . .	. . . .	. . . .
. . . .	. . . .	5,940	. . . .	. . . .	. . . .	. . . .	. . . .	30	. . . .	. . . .	. . . .
. . . .	. . . .	2,180	2,180	. . . .	. . . .	1,822	190	. . . .	40	. . . .	625
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	$182	$7,157	$1,761	$2,011
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
164,637	74,453	281,160	209,933	181,571	232,421	$5,233	$8,830	$14,545	$4,022	$17,337	$16,907
3,919	4,312	6,350	4,155	7,094	4,740	215,013	149,321	170,445	173,347	168,681	60,694
3,771	2,814	2,449	2,238	4,317	2,784	4,000	3,472.6	2,934.6	5,141	7,908	2,409
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	3,287	3,757	3,118	3,677	4,900	1,742
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	60	240	110	. . . .	. . . .	. . . .
$10,904	$24,110	$18,849	$18,675	$22,920	$28,984	$24,696	$47,917	$61,217	$29,868	$44,693	$18,515
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
180,906	60,067	89,397	37,974	35,520	43,135	22,525	28,973	43,799	22,393	5,534	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	$1,079	. . . .	. . . .	$5,750	. . . .	. . . .
61,551	61,120	93,594	108,508	86,110	23,680	64,400	127,212	79,453	308,811	411,217	146,225
. . . .	. . . .	239,670	529,240	58,164	213,808	498,717	291,526	19,365	267,856	257,514	126,701
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	$765,849	$397,683	$120,871	. . . .	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	$1,822	$8,406	$2,556	. . . .	. . . .	. . . .
70,213	56,973	36,825	43,525	. . . .	. . . .	284,216	225,783	. . . .	107,668	242,265	164,623
. . . .	. . . .	. . . .	. . . .	203,994	152,372	. . . .	. . . .	151,262	. . . .	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
$2,257	. . . .	. . . .	. . . .	. . . .	$3,150	$8,087	$16,540	$30,681	$26,584	$26,349	$32,202
. . . .	. . . .	15,360	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
. . . .	78	161	34	. . . .	6	5	35	9	27	46	. . . .
. . . .	. . . .	. . . .	43,510	. . . .	. . . .	3,819	84,148	53,784	. . . .	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	659	7,713	. . . .	. . . .

1807.

Oars, feet,	3,495
Ox-yokes, pairs,	100
Oysters, barrels,	2
Porter, barrels,	5
Plants and seeds, packages,	62
Potash, barrels,	82
Paper, bales,	9
Pearl ash, barrels,	2
Pickles, pots,	1
Roots, packages,	257
Rum, barrels,	4
Rum, gallons,	3,167
Rosewater, boxes,	1
Staves, pipe, number,	5,300
Staves, barrel, number,	3,600
Skins, hogsheads, number,	13
Skins, casks, number,	43

1807.

Skins and furs, bales,	304
Skins and furs, hogsheads,	97
Skins and furs, casks,	1
Saddles, number,	9
Snakeroot, packages,	183
Shoes, packages,	8
Shrubs, boxes,	8
Twine, barrels,	8
Twine, pounds,	2,730
Tobacco stems, hogsheads,	146
Tobacco stems, pounds,	977
Treenails, number,	11,000
Tripe, packages,	15
Tongues, kegs,	51
Vermecilli, boxes,	1,185
Vinegar, barrels,	16
Varnish, barrels,	5
Woodwork, lots,	27

1807

Woodwork for steam mill, lots,	1
Window bolts, boxes,	2

1809.

Bagging, bales,	1
Boards, value,	$8
Beer, barrels,	25
Brandy, peach, quarter casks,	1
Cotton, cards, dozen,	10
Furs, hogsheads,	2
Headings, number,	7,500
Iron hoops, number,	2,240
Iron, pig, value,	$1,260
Onions, value,	$100
Plank and scantling, feet,	1,500

	From July 1 to October 1, 1804.	1807.	1809.	1810.	1811.	1812	1813.	1814.
Iron hoops, bundles,	....	396	3	....	....	.....	....	....
Iron, pig, tons.	....	158	90	239½	55	.....	....	....
Iron, bars, tons,	....	69	360	8	67	.....	....	....
Iron, bars, pounds,	....	121	....	....	....	.....	....	....
Iron, manufactured, value.	....	....	$21,140	$12,567	....	.....	....	$230
Iron and steel manf'd, value,	....	....	....	....	....	.....	....	....
Indigo, pounds.	....	5,378	....	....	....	.....	....	....
Lead, pounds.	....	....	....	14,296	....	.....	....	....
Leather, pounds.	22,526	133,915	64,420	113,595	199,260	.....	15,330	35,000
Lard, pounds,	35,083	575,149	301,707	306,120	424,222	.....	32,584	11,392
Lumber, feet,	....	....	262,000	....	458,000	.....	56,000	....
Lumber, value,	....	....	$2,225	$6,872	....	.....	....	....
Mustard, pounds,	....	1,154	2,035	45	....	.....	....	....
Merchandise, value,	....	....	$221,343	$113,744	$190,743	$186,394.1	$17,092	$15,570
Medicines, value,	....	....	$501	....	$3,252	.....	....	....
Masts and spars, value,	....	....	$463	$2,593	$2,016	.....	....	....
Nails, pounds,	8,832	33,130	122,040	105,540	28,250	.....	....	....
Oil, fish, gallons.	....	12,628	15,423	22,640	17,580	.....	....	....
Oil, linseed, gallons,	....	44	5,157	8,813	2,908	.....	....	....
Onions, ropes,	....	86,252	800	....	....	.....	....	....
Oats, bushels,	....	1,619	200	3,996	24,138	300	....	....
Pork, barrels,	3,857	7,615	8,447	4,350	7,141	2,346	275	4
Porter, gallons,	....	16,151	35,173	....	4,860	.....	650	....
Porter, bottled, dozen.	....	1,212	1,519	....	10,276	.....	....	....
Porter, beer and cider, gallons,	6,556	3,244	....	....	....	.....	....	....
Porter, beer and cider, dozen,	....	381	425	....	....	.....	....	....
Potatoes, bushels.	....	6,097	3,848	5,726	3,564	.....	....	123
Peas, bushels,	....	536	1,502	1,064	51	.....	....	....
Pitch, barrels,	....	96	692	2,245	3,748	.....	13	....
Potash, tons,	....	....	6	....	....	.....	....	....
Pearlash, tons,	....	....	125	....	....	.....	....	....
Poultry, dozen.	....	....	19	33	....	.....	....	....
Playing cards, packs,	....	....	2,040	3,416	....	.....	....	....
Rye, bushels,	....	4,935	....	288	4,942	19,261½	....	....
Rye meal, barrels,	....	8,930	156	2,238	13,192	40,205	392	....
Rice, tierces.	925	3,371	11,504	19,158	7,375	5,807	....	....
Rosin, barrels.	....	270	3,793	5,400	2,580	.....	3	....
Rosin and turpentine, barrels.	....	....	....	....	....	.....	....	....
Sheep, number,	....	....	....	....	....	.....	....	....
Shingles, number.	484,550	948,850	259,400	400,000	205,000	.....	....	....
Staves, not specified, number,	....	2,627,030	1,951,200	....	....	.....	....	....
Staves and headings, number.	759,804	....	819,500	1,795,500	1,887,000	.....	18,000	76,000
Sugar, pounds,	8,558	38,768	63,820	153,975	....	.....	....	....
Skins and furs, value.	$13,958	....	....	$53,660	$62,812	.....	84,687	....
Soap, pounds.	125,113	517,269	531,953	419,926	565,318	.....	72,000	16,500
Saddlery, packages.	....	14	2	....	....	.....	....	....
Saddlery, value.	....	....	$2,733	$1,459	$2,402	.....	....	$120
Spirits, gallons.	7,403	8,996	13,075	86,889	167,239	.....	....	....
Snuff, pounds.	1,048	5,037	11,840	7,405	....	.....	....	....
Sausages, packages.	....	187	157	....	....	.....	....	....
Starch, pounds.	....	25,460	....	2,630	750	.....	....	....
Seeds, packages.	....	14	1	....	....	.....	....	....
Shoes, pairs.	5,579	9,532	11,225	5,045	6,057	.....	500	335
Settees, number,	....	2	2	....	....	.....	....	....
Segars, number.	....	30,000	....	1,785,000	....	.....	....	....
Tobacco, hogsheads.	406	1,083	2,589	2,014	3,643	1,105	16	993
Tobacco, manufactured, pounds,	1,682	19,260	13,540	18,630	1,304	.....	....	....
Tar, barrels,	....	1,044	13,825	14,042	5,066	.....	10	....
Tar and pitch, barrels.	....	....	....	....	....	.....	....	....
Tallow, pounds.	....	5,095	1,370	....	9,120	.....	....	....
Turpentine, barrels,	....	1,252	6,058	4,207	9,512	.....	....	....
Turpentine, galions.	....	....	475	7,208	2,470	.....	....	....
Wheat, bushels.	....	2,241	35,045	20,311	112	9,380	....	....
Wood, manufactures of, value.	....	....	$4,164	$3,732	$816	.....	....	....
Whalebone, pounds.	....	....	....	....	....	.....	....	....
Wax, pounds,	....	....	....	....	....	.....	....	....

1809.

Scantling, feet.	1,600
Playing cards, boxes,	1
Skins, packages,	2
Skins, value.	$38,404
Spades and shovels, dozen,	4
Spars, number.	333
Spars, value,	$534
Tar and rosin, barrels.	550
Vermecilli, pounds,	97

1809.

Vinegar, tierces.	6
Whips, bundles.	35

1810.

Buckwheat meal, barrels.	31
Segars, boxes,	62

1811.

Onions, bushels.	846

1812.

Beef, pounds.	84,828
Butter, kegs,	4,449
Bread, packages.	1,014
Beans and peas, packages,	468
Candles, tallow, boxes,	1,175

1815.	1816	1817.	1818.	1819.	1820.	1821.	1822.	1823.	1824.	1825.	From January 1 to July 1, 1826.
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
78	. . . .	. . . .	. . . .	. . . .	. . . .	15½	56	. . . .	3	23	4
. . . .	. . . .	. . . .	15	. . . .	. . . .	. . . .	. . . .	. . . .	50½	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	418	. . . .	. . . .	. . . .
. . . .	. . . .	. . . .	$10,223	. . . .	. . . .	$674	$9,890	$619	$12,695	$303	$7,170
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	$972	$4,514	$1,270	. . . .	$9,943	. . . .
900	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
. . . .	. . . .	8,000	. . . .	. . . .	. . . .	285	. . . .	. . . .	4,000	129,076	6,266
202,704	. . . .	45,148	88,488	67,400	55,644	25,593	28,455	897	15,452	12,108	18,793
285,250	167,115	174,605	261,075	671,436	605,421	923,572	781,257	1,067,749	851,217	917,986	491,797
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
$28,838	$50,860	$36,381	$13,869	$35,878	$24,419	$2,692	$2,171	$6,500	$5,896	$124	1,055
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
$274,829	$419,631	$137,416	$129,277	$140,481	$193,089	$135,613	$224,705	$241,881	$704,096	$748,551	$189,638
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	15,233	. . . .	. . . .
. . . .	$945	$1,474	. . . .	. . . .	. . . .	$1,088	$1,785	$145	. . . .	. . . .	. . . .
. . . .	. . . .	. . . .	16,230	. . . .	38,173	194,468	26,770	39,072	56,228	2,600	28,855
1,606	. . . .	16,565	54,732	1,650	1,458	10,954	10,927	10,424	8,258	19,972	16,123
5,843	3,485	1,440	2,480	112	. . . .	3,556	1,554	2,950	1,862	. . . .	446
. . . .	. . . .	. . . .	114,960	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	4,085	. . . .	. . . .
1,568	905	570	2,841	4,435	3,981	8,867	7,133	6,641	6,570	8,312	4,598
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
. . . .	. . . .	81,284	48,228	52,236	47,248	26,930	17,862	2,824	610	10,563	8,092
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	5,570	5,289	5,576	2,298	6,957	5,170
20	. . . .	9,348	7,610	. . . .	. . . .	6,611	5,038	3,820	3,693	1,105	280
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
136	1,668	618	933	118	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
. . . .	32	16	39	52	. . . .	2½	19½	314	22	6½	2
. . . .	. . . .	39	6	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
1,710	4,138	26,818	36,787	12,026	12,720	9,300	6,630	7,355	8,489	10,861	2,205
11,390	4,229	3,770	1,540	1,057	1,268	2,243	3,032	2,589	4,048	3,657	1,136
1,429	1,391	1,692	1,529	304	632	1,206	. . . .	7	. . . .	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	1,350	6,320	20,751	22,266	22,388	18,080	1,995
. . . .	. . . .	. . . .	83	. . . .	. . . .	. . . .	. . . .	30	112	30	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	196,500	188,000	138,800	175,500	503,000	182,000
2,600,000	1,614,000	1,270,000	1,250,000	1,003,000	563,000	644,126	598,300	762,800	1,063,550	298,723	234,000
. . . .	. . . .	12,752	1,228	. . . .	. . . .	42,143	20,574	3,276	10,721	2,285	16,169
$64,076	$48,567	$98,887	$52,766	$33,936	$43,990	$21,926	$50,082	$34,291	$41,132	$53,510	$22,184
545,082	335,360	511,392	399,894	1,001,000	1,413,027	1,418,006	1,338,791	1,515,993	1,685,555	1,299,559	341,763
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
$381	$9,486	$165	$2,164	$2,428	$2,767	$2,137	$2,968	$3,829	$1,051	$8,152	$5,075
32,545	1,027	210	16,884	8,568	16,017	84,551	33,961	52,113	151,968	79,697	3,979
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	32,020	12,567	6,296	9,229	1,489	8,892
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
1,893	. . . .	. . . .	. . . .	. . . .	3,578	32,109	25,586	51,970	29,987	23,137	17,976
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
3,466	3,336	3,288	1,887	2,245	1,846	1,935	4,727	2,166	1,832	2,085	103
. . . .	614	1,342	60	. . . .	. . . .	95,933	163,975	106,123	9,427	29,629	88,166
10,718	4,089	1,126	5,522	2,747	2,777	3,708	. . . .	10	. . . .	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	1,685	4,437	6,453	2,134	1,731	2,008	1,642
30,940	. . . .	. . . .	. . . .	. . . .	. . . .	14,173	4,505	14,614	12,309	205,783	59,526
3,352	3,265	4,229	6,340	12,873	5,554	2,013	. . . .	. . . .	. . . .	. . . .	. . . .
. . . .	. . . .	2,230	1,980	. . . .	. . . .	2,305	8,626	1,864	3,611	5,464	35,781
1,787	. . . .	. . . .	10,323	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	$3,403	$9,885	$246	$10,939	. . . .	$14,579
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	1,044	. . . .	8,400
. . . .	. . . .	. . . .	. . . .	29,452	8,081	21,580	69,203	35,923	47,732	111,263	59,056

1812.

Candles, sperm, boxes,	20
Cotton, bales,	5,103
Cloverseed, casks,	43
Rice, barrels,	135
Soap, boxes,	5,799
Snuff, barrels,	2
Snuff, boxes,	21
Tobacco stems, bales,	34
Tobacco stems, packages,	508

1818.

Cloverseed, bushels,	2,050
Wool, pounds,	11,418

1821.

Rye, oats and grain pulse, value,	$2,866

1822.

Cordage, pounds,	62
Hogs, number,	337

1823.

Hides, value,	$2,704

1824.

Timber, tons,	176

	From October 1, 1838, to January 1, 1839.	1839.	1840.	1841.	1842.	1843.	1844.	1845.
Apples, barrels,	1,011	903	655	82	156	714	6,495	1,287
Ale, gallons,						60	20,049	
Boards, feet,	57,000	1,195,000	913,000	1,278,000	1,880,496	1,325,160	2,465,000	1,694,000
Beef, tierces,								
Beef, barrels,	252	357	1,442	2,425	2,587	2,782	4,409	2,862
Butter, pounds,	9,266	87,020	409,432	522,582	191,391	565,140	385,475	625,783
Bread, barrels,	2,795	20,781	34,465	29,845	29,179	33,103	29,507	26,817
Bread, kegs,	6,865	23,023	21,297	18,112	11,496	22,322	15,918	7,597
Boots, pairs,	93	1,145	2,318	543	49	190	1,083	84
Boots and shoes, pairs,							60	
Beer, gallons,								1,050
Bark, value,								
Bark, hogshead,								
Bark, bales,								
Candles, sperm, pounds,	33,434	95,923	127,086	92,555	127,021	77,179	65,496	128,154
Candles, tallow, pounds,	26,485	84,083	191,412	276,039	251,237	489,637	426,809	463,293
Codfish, pounds,								
Cheese, pounds,	71,202	24,508	53,135	78,640	133,815	224,855	254,566	230,666
Corn, bushels,	2,895	17,097	76,749	80,166	83,772	74,603	109,732	98,616
Corn-meal, barrels,	16,550	73,795	89,486	81,872	97,884	106,484	100,506	114,617
Cotton, bales,								
Cotton, pounds,	67,513	874,194	1,498,167	764,463	614,978	1,110,898	2,357,829	938,710
Cloverseed, bushels,								
Coal, tons,								
Coin, value,		$1,524,384	$72,577					
Chocolate, pounds,	1,300	245		250	630	250	150	
Carriages, etc., value,		$2,050	$1,575	$6,320	$6,624		$3,004	$2,642
Cables and cordage, cwt.,		71	31	10	2		57	309
Cables, number,	18							
Cattle, number,			1	2		17	13	2
Cider bottled, dozen,					603	2,830	1,052	
Cordage, pounds,						1,853	12,105	
Dye-woods, value,	$38,571	$157,802	$94,548	$90,292	$46,926	$18,098	$28,731	$22,309
Fish, dry, cwt.,								
Fish, quintals,	1,826	4,923	1,892	1,874	3,917	3,528	6,800	5,483
Fish, pickled, barrels,	257	1,261	2,078	1,999	2,253	3,550	2,791	3,536
Fish, pickled, kegs,		104						
Flour, barrels,	29,168	195,381	294,775	159,555	161,846	164,517	197,001	200,401
Furniture, value,	$13,305	$72,680	$54,218	$44,374	$54,683	$30,775	$27,510	$23,370
Flax and hemp, manufactures of, value,				$1,660				
Flaxseed, bushels,						5		
Ginseng, pounds,		351,749		622,474	107,712	10,298	127,000	
Gunpowder, pounds,	250	148,874	111,120	88,005	163,500	67,952	126,095	61,353
Gunpowder, kegs,								
Grain-pulse, value,	$1,172	$2,918	$22,527	$29,141	$15,414	$23,114	$20,379	$23,954
Hides, pounds,								
Hides, number,	20	715	265				857	1,943
Hams, pounds,	1,331						282,474	186,578
Hams and bacon, pounds,		78,135	72,550	353,572	230,106	209,991		
Hemp, pounds,								
Hats, value,	$659	$5,045	$6,833	$4,560	$1,409	$2,533	$1,230	$3,474
Hops, pounds,	330	1,318	16,137	1,233	3,709	3,464	4,224	1,871
Horses, number,	17		4	4		9	45	66
Hogs, number,			30	25		112	361	413
Iron, bar, number,		2						
Iron, tons,		2						
Iron castings, value,	$1,341	$8,667	$7,477	$13,174	$14,242	$171		$2,920
Iron, manufactures of, value,	$12,223	$12,863	$164,118	$47,318	$23,782	$40,430	$31,379	$91,057
Iron, pig, tons,				9	4			
Indigo, pounds,								
Lumber, value,		$518	$2,156	$1,115	$1,699	$80	$26	$2,589
Lard, pounds,	73,859	466,006	886,314	983,378	708,384	784,619	968,280	1,867,925
Leather, pounds,	16,804	71,853	90,015	7,678	23,539	20,380	6,357	71,444
Lead, pounds,	6,427	7,192	26,146	157,736	467,927	161,630	296,198	27,424
Merchandise, value,	$119,793	$429,543	$703,713	$508,306	$468,946	$397,527	$583,266	$499,433
Masts and spars, value,	$630	$1,101	$459	$241	$463	$692	$563	$803
Molasses, gallons,				1,166				
Mules, number,								4
Nails, pounds,	35,096	219,105	280,436	242,217	335,230	383,700	214,400	233,200
Onions, value,								
Oil, linseed, gallons,	766	393	480	238	368	718	386	742
Oil, fish, gallons,	4,759	40,651	25,185	42,536	23,469	48,943	51,697	75,967
Oil, lard, gallons,								
Pork, barrels,	167	1,752	2,871	7,116	6,995	5,909	10,320	8,429
Pork, tierces								
Potatoes, bushels,	442	2,403	9,273	6,209	8,713	6,852	9,774	4,052
Pearlash, tons,				59				
Potash, tons,		90	69		27	39	38	
Porter, beer, etc., gallons,	9,126	27,202	9,836	10,413	26,239	38,253		36,518
Porter, beer, etc., dozen,	1,966	3,104	4,693	6,769	3,669	1,216	4,086	5,937
Potash and pearlash tons,					24	2½	5	51
Porter, bottled, dozen,					2,115		886	
Rosin and turpentine, barrels,	2,972	18,483	12,038	18,113	19,110	20,571	21,959	23,620
Rye meal, barrels,	1,695	24,527	36,474	26,886	22,520	44,103	19,119	17,415

1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.	1855.	1856.
1,124	350	763	83	140	252	788	214	123	801	3,546
684,000	1,567,000	1,737,000	1,419,000	1,563,000	1,382,000	1,270,000	1,260,000	2,350,000	1,941,000	1,580,000
3,808	4,251	4,920	3,173	4,859	11,125	5,897	8,116	929	5,667	4,043
592,126	625,124	503,494	450,939	501,530	487,796	329,027	404,674	7,751	1,745	3,521
31,916	36,808	26,127	16,204	22,336	20,276	20,730	14,408	471,141	349,897	411,794
10,423	10,543	10,363	5,755	6,332	11,843	9,219	9,467	16,761	16,740	17,467
		180			780			7,274	5,816	9,152
								492		2,518
								1,016	3,925	
	$45,721	$53,908	$67,751			$2,246	$14,037		$13,482	$69,584
				7,157	4,514		1,717	903	1,361	40
77,831	81,893	64,888	93,213	66,865	33,120	60,406	5,247			
572,980	515,201	667,625	742,944	689,380	896,579	898,590	22,595	7,711	10,367	5,939
							623,136	614,312	618,994	670,641
164,562	205,694	1,497,349	164,395	98,173	144,616	155,843	91,532	63,852	58,110	98,973
479,828	1,102,421	808,529	904,664	603,713	558,103	136,743	522,702	923,649	686,252	1,093,255
144,857	235,990	139,007	92,474	94,023	65,454	75,772	74,189	90,024	95,168	91,820
537,751	219,029	1,488,606	1,402,437	1,836,965	927,894	3,422,604	927,195	1,052,658	154,308	11 351
			2,220	8,566	14,033	17,727	16,326	14,753	20,103	13,599
				2,201	280	480				
$4,510	$2,412	$780	$458	$1,570	$2,428	$4,367	$1,710	$1,375	$4,484	$18,490
245		93	116	81	8	94	66			258
30				1	22	13	2	3	8	
	500							9,600	107,000	
$36,254										
5,647	2,874	2,323	1,672	1,329	4,307	1,190	2,348	1,999	3,410	4,348
1,812	1,312	988	477	785	1,630	1,270	674	1,142	621	553
	40								10	15
349,315	420,870	176,642	221,633	184,491	300,851	402,357	480,475	251,486	218,197	346,356
$19,436	$20,896	$23,648	$12,694	$20,178	$20,297	$19,761	$20,901	$11,961	$33,807	$18,748
	41,891									
60,966	35,325	2,500	6,825	46,925	83,800	70,650	32,685	20,587	97,075	55,140
$32,137	$41,150	$46,946	$11,562	$40,364	$41,834	$69,320	$5,451	$9,012	$57,807	$232,355
100									2,027	
699,698	2,500,912	4,914,162	5,658,307	2,177,675	612,885	591,304	5,695,722	6,142,206	5,071,567	5,604,133
$3,351	$3,127	$146	$2,061	$669	$178	$96	$842	23,400		
3,923	2,466	3,616	6,128	1,007	738	2,809	1,987	$576	$955	2,498
6				2	7	3	5	1,189	19,672	2,483
856	420	150						4	2	2
								20	100	
	6									
$647	$350									
$144,160	$146,718	$117,111	$139,571	$170,870	$275,819	$264,610	$238,461	$222,843	$197,935	$369 393
13	10	35	5			80				
$1,534	$170	$1,146		$470	$135		36			
2,260,402	2,931,012	3,931,670	3,187,945	2,417,557	4,052,106	1,326,467	1,307,558	$1,799	$1,200	
90,956	56,781	15,202	6,107	15,241	4,931	10,796	6,078	2,608,843	1,023,679	1,014,111
20,144	4,100	3,807	900	20,690	35,246	29,175	3,386	3,892	10,246	3,454
$304,627	$323,871	$979,418	$330,557	$366,500	$1,345,525	$630,688	$1,009,431	23,182	35,920	39,926
$392	$369	$210		$380	$145	$40	$240	$638,286	$678,306	$541,992
					240					
						6				
306,800	442,570	516,200	477,105	439,194	360,045	323,400	448,900	575,100	432,900	366,525
121	120	328	253	190	42			$627	$1,753	$1,196
86,106	46,175	52,935	55,872	87,750	146,489	40,806	212	872	726	445
		16,818			20,309		26,791	38,885	12,913	22,232
11,935	8,939	13,891	11,399	10,081	7,395	7,048	9,635	14,385	6,138	7,289
8,389	8,981	8,784	4,899	2,359	3,571	2,796	830	219	1,542	392
									5,034	3,945
33,223	46,376	15,558	16 438	19,974	9,260	7,756	9,487	5,700	15,310	20,340
3,188	5,285	3,980	2,303	2,483	2,905	845	740	3,165	1,895	2,789
16		2	7	5	2					7
10,206	11,006	9,076	7,917	14,091	17,302	13,746	10,274	23,302	26,909	13,187
19,730	17,769	14,188	26,546	25,497	11,129	6,462	3,780	9,192	12,757	15,043

	From October 1. 1838. to January 1. 1839.	1839.	1840.	1841.	1842.	1843.	1844.	1845.
Rice. tierces.	99	587	814	975	1.572	2.086	2,268	1.264
Rice. barrels,	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
Shingles,	34.000	48.000	89,000	47.000	93.000	100.000	141.000	89.000
Staves and headings,	203.000	507,000	394.000	1.335.000	698.000	204.503	281.000	814.000
Saddlery. value,	$2.348	$23.471	$10.017	$3.913	$381	$3.019	$4.626	$1.148
Spirits, gallons.	813	13.670	29.967	41,147	43.461	27.336	15.220	28.726
Shoes. pairs,	1,837	8.557	3.087	2.782	2.527	. . . .	1.361	1.416
Soap. pounds.	271.018	1.006.728	1.125.374	973.568	980.729	1.730.003	1.653.918	1,148.291
Snuff, pounds.	1,838	11.151	9.289	18.356	9.107	44.577	10,965	35.967
Skins and furs, value.	$42	$2.112	$5.709	$3.556	$4.512	$4,283	$3.693	$4.144
Sugar, pounds,	160	210.164	1.002.164	2.830,503	1.342.051	158.337	136.582	347.320
Salt. bushels.	. . . .	60	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
Sheep. number,	60	. . . .	105	66	30	569	310	266
Tar and pitch, barrels,	1.068	1.209	1.195	2.251	1.191	1.991	1.226	1.260
Turpentine. gallons.	3 126	8.393	6.880	8.758	5.889	7.826	11.506	8,495
Tobacco. hogsheads.	504	1.627	2.276	3.855	1.262	2.484	970	453
Tobacco. manufactured. pounds.	11,314	265.498	489.586	390.423	521,259	680,837	401.862	394.566
Tobacco. bales.	. . . .	. . . .	. . . .	. . . .	. . . .	. .	. . . .	. . . .
Tobacco, cases.	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
Tallow. pounds.	25.963	3.683	43.903	124.845	325.270	637.651	1.340,450	827,821
Trunks. value.	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
Vinegar. gallons.	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
Whalebone pounds,	. . . .	43.467	50	5,541	. . . .	. . . .	. . . .	. . . .
Wood. manufactures of. value.	$82.339	$53,960	$72,217	$20.581	$32.549	$40.396	$52.544	$41.301
Wax. pounds.	5.614	7.030	11.476	7.526	12.269	29.240	58,769	8.740
Wheat. bushels.	. . . .	38.171	280,047	57.371	97.953	32.235	23.375	84.372

	1857.	1858.		1857.	1858
Beef. tierces.	2.981	5,591	Corn. bushels.	624,936	462.900
Beef. barrels.	3.024	5.676	Corn-meal. barrels.	47,968	39,473
Butter. pounds,	375.120	607.712	Cotton, bales.	1,584	464
Bread. barrels.	15,411	21.553	Cloverseed bushels.	4.387	16.021
Bark. hogsheads.	3,512	1.817	Coal. tons.	21.143	24,776
Candles. tallow, pounds.	546,823	518,642	Fish. pickled. barrels.	1.841	953
Codfish. pounds.	195,430	362.426	Flour, barrels	198,867	218,719
Cheese. pounds.	58,134	116.355	Gunpowder. kegs,	4.118	5.206

1846.	1847.	1848.	1849.	1850.	1851	1852.	1853.	1854.	1855.	1856.
1,826	2,102	2,786	1,749	2,873	2,949	2,719	5,617	4,487	1,446	3,100
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	450	605	1,279
1,252,000	1,225,000	257,000	130,000	39,000	77,000	53,000	46,000	150,000	87,000	25,000
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	$10,111	$3,526	$503	$594	. . . .
27,637	13,477	15,967	9,159	2,993	4,436	2,839	3,723	10,681	25,750	19,663
867	505	2,296	3,081	2,360	11,729	13,407	10,892	. . . . .	. . . . .	. . . .
1,157,038	1,129,407	1,043,421	928,240	912,667	905,792	1,088,225	677,880	1,240,382	1,106,588	1,088,939
8,376	20,455	6,087	25,020	15,878	7,857	8,834	15,547	8,237	17,193	5,813
$229	$120	$225	$3,000	$3,700	$440	$20,471	$394	. . . . .	$5,254	$9,493
$5,292	1,472	20[illegible]569	6,449	76,464	10,079	10,257	27,735	56,669	96,926	102,384
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . .
462	240	70	. . . . .	. . . . .	. . . . .	49	. . . . .	30	62	12
575	5,716	977	736	1,879	677	551	2,162	3,391	1,260	803
10,938	8,613	11,737	12,541	11,012	11,283	12,803	20,544	22,141	21,077	15,031
2,314	693	1,046	1,338	797	661	1,123	707	912	301	201
354,706	246,958	381,954	306,656	119,753	213,192	247,408	306,756	325,920	194,865	123,118
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	128	282	176
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	125	181	102
844,542	358,356	701,696	268,010	712,546	815,117	417,508	420,612	2,525,123	746,389	373,753
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	$130	$110
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	34,459	34,202	40,235	47,561	59,110	61,939
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	25	. . . .	. . . .
$45,651	$138,497	$167,525	$96,359	$114,560	$127,148	$128,033	$106,115	$153,539	$167,898	$166,157
12,624	16,175	16,092	43,275	44,913	37,144	80,980	21,724	13,898	27,477	38,266
245,136	523,538	207,218	177,302	205,609	225,001	565,317	782,910	187,629	226,071	643,859

	1857.	1858.		1857.	1858.
Hams and bacon, pounds, . . .	3,711,521	848,399	Rice, tierces, ...	1,589	5,132
Lard, pounds.	1,035,864	1,496,898	Soap, pounds.	952,246	1,108,577
Oil, fish, gallons, ...	29,132	20,932	Tobacco, manufact'd, pounds,	657,903	393,189
Pork, barrels, ...	5,683	14,383	Tallow, pounds, ...	1,139,364	1,587,664
Pork, tierces, ...	. . . . .	100	Vinegar, gallons, ...	96,350	113,150
Porter, beer, etc., gallons, . .	41,280	38,850	Wheat, bushels.	189,738	88,199
Rye meal, barrels, ...	8,176	4,706			

	1859.	1860.	1861.	1862.	1863.	1864.	1865.	1866.
Ale, porter, etc., gallons,	30,046	25,559			67,851			
Ale, porter, etc., value,								
Acids, value,					$187			
Acids, carboys,			23					
Animals, number,		282						
Animals, value,								
Agricultural implements, value,			$2,179	$1,493	$202			
Alcohol, value,			$284					
Alcohol, gallons,					101			
Apples, green, barrels,		282	239	694	961			
Apples, green, bushels,								
Apples, dried, barrels,			133	292				
Apples, dried, pounds,					489			
Ash, soda, pounds,								
Ashes, cwt.,		10	36		8			
Ashes, pounds,								
Axes, dozens,			19					
Artificial teeth, value,				$47				
Bark, value,	$61,598	$35,122	$49,369	$68,644				
Bark, hogsheads,					2,025	2,076	636	699
Beef, tierces,	5,981	6,989	6,365	4,324	4,089	2,784		
Beef, barrels,	4,680	4,066	2,599	3,900	4,292	4,391	1,469	
Beef, pounds,								407,388
Boilers, value,								
Beer, etc., gallons,			23,900	32,559				
Beer in bottles, dozens,			840	1,419				
Billiard tables,			1					
Billiard apparatus, value,				$358				
Blacking, value,			$1,055		$1,974			
Blacking, dozens,				3,235				
Boneblack, barrels,			812	600				
Boneblack, pounds,					271,118			
Boneblack, hogsheads,			10	47				
Books, value,	$2,760	$5,622	$2,362	$1,984	$1,393			
Bacon, pounds,								
Boots and shoes, pairs,	5,069	2,194	765	1,526	4,197			
Boots and shoes, cases,					13			
Bonedust, pounds,								
Brass, manufactures of, value,			$609					
Barrels, empty, number,								15,018
Barrels, empty, value,								
Bread and biscuit, bags,			384					
Bread and biscuit, kegs,	2,786	2,116	1,464	12,467	3,486			
Bread and biscuit, barrels,	15,960	16,797	20,780	15,208	23,617	10,459	9,702	
Bread and biscuit, pounds,								1,766,173
Bread and biscuit, boxes,			740					
Bells, value,								
Bones and bonedust, cwt.,								
Bricks, building, value,	$6,967	$4,659	$712	$1,791				
Bricks, building, number					49,000			
Bolts, value,				$403				
Bricks, fire, value,			$1,040					
Bronze, manufactures of, value,								
Brooms and brushes,		$612	$310	$2,199	$1,119			
Burning fluid, gallons,			80	166				
Butter, pounds,	596,641	733,642	955,064	986,080	622,426	224,288	149,484	119,629
Boats and oars, value,					$3,422			
Cooperage, stock, value,								
Cordage, pounds,								
Cordage, value,								
Cider, bottled, dozens,				150				
Cables and cordage, cwt.,	$35	728	636	492	553			
Cartridges, value								
Candles, sperm, pounds,					203,424			
Candles, tallow, pounds,	765,178	505,103	700,932	1,206,677	834,984	768,395	276,386	544,850
Concentrated lye, value,								
Carriages, etc., number,			21					
Carriages, value,	$20,881	$16,601		$7,139	$28,812			
Corn, bushels,	47,346	446,324	767,307	790,898	258,117	83,050	137,359	752,888
Corn meal, barrels,	46,354	55,358	32,718	49,951	36,029	34,401	22,933	27,735
Carriages, children's, value,			55					
Cars, railroad, number,			34					
Cars, railroad, value,		$9,400		$24,512				
Cars, railroad, boxes,			69					
Caps, value,								
Car-grease, barrels,			32					
Cattle, number,	12		7		5			
Cement, value,			$307					
Calf skins, value,								
Calf skins, number,								
Chalk, hogsheads,			6					
Chalk, value,				$49				
Cheese, pounds,	802,115	123,399	296,419	219,681	208,478	93,777	5,434	19,105
Chrome ore, value,					$1,595			
Chrome ore, barrels,			930	108				
Chrome ore, casks,				393				

1867.	1868.	1869.	1870.	1871.	1872.	1873.	1874.	1875.	1876.
			8,778	24,287	26,845	17,280			
									$1,021
1,711									
		$1,300	$4,275			$4,405	$1,170	$3,658	$9,810
$20	$11,501	$3,745	$11,591	$9,050	$12,320	$1,617	$50,129	$68,401	$86,666
1,551	30								
		18,687							
4									
	5,072	5,490	39,949						
$52 280	$19,868	$12,981	$17,185		$22,261	$59,866	$24,428	$22,615	$1,204
	119,442								
725,735		444,158	293,852	594,399	286,459	651,765	13,738,806	12,473,786	4,831,409
30,785	13,215	315	$16,781	$21,162	$27,748	$6,831			
						1,917			
	$603								
$782	$259	$527	$709		$653				
			88,668				578,582	225,113	164,360
$1,816	$2,495	$1,000	$600		$1,615	$3,403	$5,116	$2,396	$6,184
216	157,974	181,303							
		286							
700									
	$990	$796	$560						
	31,961								
		$548							
999,508	1,165,068	288,934	1,940,983	1,868,994	1,670,237	1,128,533	815,140	830,001	420,683
$324									
$7,208	$5,852					279	1,900		$1,328
		4,000			$1,431			$3,398	
$3,295	$3,198	$1,764	$2,836		$1,750	$2,080	$30,000	$30,000	
99,630	30,063	28,937	67,467	96,384	69,708	46,244	$1,792	$1,802	$2,873
	$975						454,616	163,678	796,221
		$125	$988,121	$880,057	$747,025	$1,043,165	$886,897	$679,274	$497,383
		17,017	23,364	67,076	34,959	12,137	90,769	204,474	99,424
		$6,244							
154	522								
							$7,039		
304,790	159,865	261,191	240,713	203,262	167,181	124,571	104,603	48,646	78,954
	$198								
$20,723	$12,169	$1,437	$13,519		$8,305	$4,460	$3,327	$11,181	$13,590
877,464	570,116	87,518	66,358	1,644,779	3,462,473	2,002,368	2,203,588	4,601,586	16,790,691
27,699	24,892	37,332	24,620	29,349	36,443	30,185	27,403	26,367	25,510
			23		60				
						$22,400		$10,320	$12,585
	$400								
	2								
	$300								
300									
44,164	9,746	17,643	19,506	113,995	118,978	1,321,116	1,990,159	2,440,530	1,696,189

	1859.	1860.	1861.	1862.	1863.	1864.	1865	1866.
Clocks, value			$401	$58	$287			
Cloverseed, bushels	21,915	62,623	17,175	26,588	34,646	1,521	3,784	6,991
Coal, tons	23,446	31,497	22,211	11,562	43,605	8,991	17,486	41,871
Chandeliers, etc., value				$5,520	$9,600			
Chemicals, value				$82				
Cobalt, barrels			600					
Combs, value		$485	$656	$1,156	$1,868			
Confectionery, value			$239					
Copper, manufactures of, value		$13,745	$8,245	$1,960	$75			
Copper and brass manufactures of, value	$12,641				$7,007			
Copper ore, pounds					3,785			
Cotton, raw, pounds	87,508	616,143	1,124,751	27,745	2,918			
Cotton prints, yards								
Cotton manufactures, white, value	$38,396	$40,548	$11,442		$7,992			
Cotton manufactures, printed, dyed, etc., value	$24,763	$30,620	$36,090	$50,599				
Cotton cord, cases			8	8				
Cotton duck, yards								
Cotton duck, value		$11,235	$2,135	$7,961	$279			
Cotton wicking, bales			5	210				
Cotton waste, bales			40					
Cotton waste, pounds				1,217				
Cotton, other manufactures, value		$373			$2,615			
Cutlery and steel tools, value			$1,730	$1,364	$2,663			
Drugs, etc., value	$23,333	$32,568	$19,541	$20,097	$16,567			
Dentists' materials, value				$136	$73			
Dye stuffs, value								
Earthenware			$96	$88	$590			
Emery rock, value								
Engravings, value				$22				
Furs, value								
Feathers, value								
Farina, value			$8					
Fish, dry, cwt	1,491	2,213	1,966	3,037	1,246			
Fish, pickled, barrels	764	768	3,653	3,359	2,888			
Fish, pickled, kegs		10	1,258	2,520	1,984			
Fish, value								
Fire engine, value		$3,585	$3,448	$1,037				
Fire hose, value			$127					
Fruits, dried or prepared, value			$416	$129	$623			
Fruits, preserved, value				$885				
Fertilizers, barrels				62				
Fertilizers, value								
Fancy goods, value					$1,072			
Gas fixtures, value			$3,647					
Gas tubes and pipes, value			$5,601					
Gas meters, value			$2,025		$24			
Grease, pounds								
Glassware, value		$2,527	$4,104	$3,199	$5,158			
Gloves, value			$122					
Gold coin, value					$17,738			
Gold and silver coin, value	$259,000	$23,500	$55,120	$81,500				
Gold sweepings, value				$4,650	$400			
Gold leaf, value					$90			
Grass seeds, value			$1,069					
Grindstones, value			$135	$55				
Grease, value					$1,257			
Glass, manufactured, value	$1,756							
Gypsum, value								
Gunpowder, pounds	75,718	105,500	50,000		79			
Glue, value				$157				
Glue, pounds					1,075			
Gun-making machinery, value			$950					
Grass seed, timothy, bushels				1,556				
Guano, tons								
Hams, pounds								
Hams, bacon, etc., pounds	908,887	672,635	1,573,874	4,600,560	1,980,427	741,281	127,655	309,965
Hair, pounds				22,342				
Hair, manufactured, value								
Hair, unmanufactured, value								
Holloware and hardware, value			$1,028	$550	$2,078			
Hogsheads and barrels, empty, value				$4,812	$484			
Hay, bales			278	548	5			
Hay, tons								
Hogs, number	50			581				
Hemp, raw, tons				167	500			
Hemp, manufactures of, value		$615	$218	$3,782	$2,009			

1867.	1868.	1869.	1870.	1871.	1872.	1873.	1874.	1875.	1876.
$512	$2,084	$97							$25,250
3,255	3,255								
28,026	37,675	23,937	14,505	20,766	32,537	31,910	61,043	53,735	58,188
$2,191		$1,655	$8,512						$12,850
1,445,289	460,008	1,000	16,940	1,252,872	277,920	7,308,067	40,000 14,298,118	39,000 13,551,977	18,615,475
15,467									
$177	$7,556	$3,107	$2,378	$7,968	$5,513	$6,986	$31,739	$64,970	$102,230
22,668	5,766								
$13,641	$15,309	$11,822	$18,377	$54,131	$32,557	$52,359	$105,897	$187,048	$132,458
		$325					$32,155	$22,830	$6,163
$175	$300	$11,527 $949	$2,523 $797					$1,480	$11,169 $1,309
								$3,000	
$24,000	$6,000					$20,826	$4,480	$2,000	$529,230
									$13,639
339	152								
153	153								
$15	$15	$2,154	$5,325	$12,595	$8,573	$2,409	$14,679	$10,245	$220,663
$41	$562	$380	$1,827		$1,461	$4,555	$16,326	$35,066	$21,148
	$180	$21			$5,200			$54,632	
	$941	$3,636	$5,244		$11,649	$12,318	$6,369	$1,600 $6,597	
$3,312	$2,183	$1,277	$1,747		$4,828	119,484 $3,931	113,481 $2,385	145,748	
		$57,214				$28,368			
$28,325	$45,007		$7,000	$119,562			$85,708 $5,776	$102,837	$10,925
	$618								
	$716								$2,984
2,500		4,000				$1,119			
469,004	101,080		24						
	4,569	6,138	166,641	236,208	240,857	6,067,337	8,370,405	22,813,666	71,556,034
				$16,022	$3,520	53,289			
						$32,566		$48,625	64,318
320	251	4		168	106	20	184	146	110
$13	$576	$223						$1,309	

	1859.	1860.	1861.	1862.	1863.	1864.	1865.	1866.
Horses, number,	4			2	1			
Horses, value.		$300						
Hides, value.		$34,118	$48,317		$7,500			
Hides, number,				1,890				
Hops, pounds.		5,271	21,721	8,180	2,248			
Honey, gallons,								
Horses and mules, number,			10					
Household furniture, value.	$15,137	$19,931	$9,501	$9,193	$11,869			
Hats, value,		$271		$166	$1,021			
Hoops, wooden, value.		$77,795						
Hoop-skirts, value,								
Ivory cases,			4					
India rubber manufactures, value.		$259	$339	$5	$962			
Ink, printing, etc., value,			$293		$280			
Ice, tons,	305							
Iron, bar, tons,					47¾			
Iron, bar, cwt.,	109	234		8,171				
Iron, pig, cwt.,				15				
Iron, bar, plate and sheet, value,			$11,617					
Iron, cotton gin,				1				
Iron, railroad rails, tons,	1,052		603½		16			
Iron, railroad rails, value,				$29,105				
Iron, railroad wheels and tires, value,			$3,335	$7,546				
Iron, railroad, small,				$9,194				
Iron locomotives, number.			8	6	6			
Iron locomotives, value,	$101,005							
Iron turntables, value,			$2,500					
Iron ships, lighter, value,				$8,500				
Iron machinery, value,		$662,230	$255,604	$295,767	$245,766			
Iron steam engines, value,					$5,754			
Iron tanks, number,			8					
Iron castings, etc., tons,					56			
Iron castings, etc., value,	$140,089		$8,113	$7,840				
Iron castings, etc., cwt.,	4,805							
Iron truss-hoops, value,			$594					
Iron nuts, bolts, etc., kegs,			136					
Iron nuts, bolts, etc., value,				$430				
Iron chains, value,			$62					
Iron boiler plate, value.					$893			
Iron nails, pounds,	176,165	131,200	136,150	588,000	372,250			
Iron manufactures, all other, value,	$507,452	$127,339	$4,075	$1,553	$281,217			
Iron turntables and tanks. value,				$3,220				
Iron, wrought, boiler, etc., value.				$2,896				
Iron railings, etc., value,				$3,886	$3,909			
Iron hoops, value,				$2,580	$396			
Iron safes, value,				$595	$175			
Iron sheet, cwt.,								
Iron car wheels, number.								
Jewelry, value,				$61				
Steel, value,			$275					
Steel springs, value,			$648	$663				
Lampblack, hogsheads.			218	139				
Lampblack, pounds,					556			
Lamps, value,			$1,413	$9,299	$4,219			
Laths, number,								
Lard, pounds,	1,647,437	1,205,890	3,428,897	9,267,868	6,506,284	3,443,197	800,565	2,075,570
Lead, pounds.		5,440	737		2,005			
Lead, manufactures of, value,	$3,678			$36	$835			
Leather, pounds.	1,283	5,725	2,170		2,031			
Leather, morocco and patent, value.	$7,674	$1,980	$3,545	$756	$142			
Leather manufactuers, other, value,					$443			
Lime, etc., hogsheads,			20					
Lime and cement, value,					$473			
Locks, value,			$149					
Lumber and boards, feet,	2,623,000	3,262,000	3,046,000	2,091,000	3,853,000			
Lumber, other, value,	$24,569	$13,535		$28,255				
Meats, value,								
Masts, value.								
Mules, number,	16							
Mules, value,								
Marble manufactures, value		$1,987	$316	$533	$754			
Matches, gross,				5,021				
Matches, value,			$1,700		$2,066			
Mathematical and other instruments, value.			$1,502		$56			
Musical instruments, value.		$1,162	$514	$800	$1,570			
Medicines, value.					$7,334			

1867.	1868.	1869.	1870.	1871.	1872.	1873.	1874.	1875.	1876.
	7								
						$95,312	$656,647	$377,938	
951		338					5,582		351
									245,034
									11,393
$10,061	$12,911	$1,778	$2,049	$5,438					
	$302								
		$208,611							
$504		$5							
$740	$343	$185							
					420				
128		12,130	20			2,954	641	5,080	
422									4,620
½			56		538				263
						$24,531		$31,115	
		5							
$358,870	$284,780	$75,926	$74,147	$96,996	$468,612	$96,333	$811,479	$183,873	$172,580
					$234,736	$533,452	$187,088	$17,150	
		$101	$13,267		$3,814	$3,218	$1,274	$1,575	
510,351	377,180	196,116	193,005	176,900	149,250	307,360	355,100	281,800	254,350
$24,235		$14,560	$8,252	$129,706		$229,136	$179,278	$122,999	$106,650
161									
			504	730			1,999		2,120
									$6,242
	$1,090	$1,860	$248		$1,490				$2,615
		6,000							
2,220,000	1,071,581	1,005,376	988,290	933,087	1,074,781	3,349,720	8,246,342	14,056,631	14,356,924
$692	$2 275		$3,903		$6,106	$41,731	$316,568	$1,074,354	$994,818
2,738,000	1,636,000	1,117,000	4,451,000	3,802,000	1,906,000	2,475,000	3,039,000	5,268,000	3,536,000
$321		$20,919				$17,446			
$750						$12,282	$1,864		
		$200							
	$965	$1,066	$1,029		$1,578		$1,637	$6,585	$11,661
$2,409	$5,269	$1,790	$3,759		$2,758	$1,154	$1,662		$1,278
	$310	$268						$2,165	

	1859.	1860.	1861.	1862.	1863.	1864.	1865.	1866.
Meats, preserved, value,								
Matting, value,			$361					
Medicines, value,			$672					
Metals, value,			$73					
Minerals, value,			$50					
Muskets, value,								
Moss, bales,			8					
Molasses, gallons,		320			100			
Mirrors, value,				$130				
Nickel ore, value,	$27,700				$3,010			
Nickel oxide, tons,			15					
Nickel grain, value,			$250					
Nuts and seeds, value,			$115		$405			
Oil-cake, tons,					2,365			
Oil-cake, value,	$152,887	$163,226	$129,223	$131,234				
Oil-cake, pounds,								
Oilcloth, value,			$450					
Oil, lard, gallons,	4,260	3,077	6,534	72,215	53,558			
Oil, neatsfoot, gallons,								
Oil, linseed, gallons,		2,780	543	134	364			
Oil, fish, gallons,	5,879	8,052	37,429	30,235	4,414			
Oil, carbon and coal, bbls.,			2,160					
Oil of almonds, cases,				25				
Oil of almonds, value,			$671	$713				
Oil, petroleum, crude, gallons,				1,952,357	3,363,472			
Oil, petroleum, refined, gallons,				690,593	1,482,515			
Oil, benzine, gallons,				40,433	188,634			
Oil, cottonseed, gallons,								
Oil, coal, gallons,				520	171,986			
Oil, lubricating, gallons,								
Oil of nuts, etc., gallons,					105			
Oil, kerosene, barrels,								
Oil, naphtha, gallons,								
Oil, other, value,								
Oil, palm, gallons,								
Oil paintings, etc., value,			$100		$504			
Oysters, value,			$533	$525	$1,146			
Oars, value,				$713				
Onions, value,	$3,349	$8,152	$4,466	$3,296	$3,054			
Onions, bushels,								
Ordnance stores, value,								
Provisions, value,								
Peanuts, bushels,				159				
Plaster, value,				$37				
Peas, bushels,			3,876	2,557	4,491			
Pins, value,				$130				
Paints and varnish, value,	$5,077	$2,239	$4,035	$1,894	$2,027			
Paper and stationery, value,	$8,364	$9,780	$14,462	$13,845	$11,259			
Percussion caps, value,			$19					
Perfumery, cases,			86					
Perfumery, value,				$18,754	$1,094			
Photographic materials, value,			$1,768	$1,756	$2,461			
Pickles and sauces, value,			$280		$432			
Picture frames, value,			$50	$83				
Plated ware, cases,			48					
Plated ware, value,				$4,978	$1,193			
Pianos, number,			1					
Pork, tierces,		50	190	153	34			
Pork, barrels,	9,182	11,382	18,947	18,477	17,655	6,220	3,156	
Pork, pounds,								904,823
Potatoes, bushels,	5,464	10,541	13,867	6,496	7,206			
Printing press, etc., value,		$135		$3,276	$741			
Poultry, value,				$350				
Personal effects, value,					$2,550			
Printing materials, value,								
Residuum, barrels,								
Rags, bales,			995	471				
Rags, value,					$39,384			
Rags, pounds,								
Refrigerators, value,			$165					
Rice, tierces,	2,453	2,558	976	10				
Rice, barrels,	1,547	1,561	513	5	100			
Rice, pounds,								
Roots, bales,			10					
Roots, value,					$42			
Rosin, barrels,	26,053	9,190	5,363					
Rosin and turpentine, value,				1,181	652			
Rye, oats and pulse, value,	$9,875	$20,257						
Rye, meal, barrels,	6,263	3,424	2,204	2,968	1,378	1,026	884	1,380
Rye, bushels,			12,387	14,000	24			
Beans, bushels,			7,599	3,987	1,227			
Oats, bushels,			5,912	2,079	681			
Oatmeal, casks,				40				
Bran, bushels			3,954	7,924				

1867.	1868.	1869.	1870.	1871.	1872.	1873	1874.	1875.	1876.
$276									
		$2,176	$4,327						
		1,026	373,475	1,203,368	1,998,009	1,643,606	526,601	4,399,937	468,862
								$35,400	
12,916,721	3,551,815	6,810,902	6,189,071	7,628,832	11,265,921	20,112,407	18,267,882	17,556,214	20,382,876
682	442	312			5,916	1,634		20,537	$8,734 5,265
255						5,414			
4,241		2,094							
3,228,316		1,512,532	3,339,795	3,833,979	7,213,058	4,837,394	1,614,116	6,497,845	7,512,635
25,245,792	23,312,320	19,807,607	45,681,839	51,352,996	47,984,845	80,166,187	70,810,711	55,112,341	55,107,856
436,417	2,920,992	228,229	287,333	714,615	1,496,724		1,729,862		3,211,159
		186,891							4,240
						5,373			
		4,320							
		90,893	562,770			1,829,462		2,494,114	
		240	$1,110		$2,087	$2,470	$4,010	$3,474	$9,420
$300	$100			$2,213	$789	$14,397	$1,245	$4,155	$39,581
$29	$550	$93	$625	$495		$673			
3,071	105	882	1,623	1,129	358				
			$1,354					$32,975	$22,442
								$4,943	$1,243
$113		$81							
$3,035	$3,005	$4,461	$8,281	$9,974	$6,964	$2,346	$6,384	$3,881	$39,595
$1,925	$3,609	$3,750	$3,847	$3,089	$4,609	$9,105	$7,424	$4,782	$1,695
535,513	589,495	542,857	950,157	931,020	663,921	1,216,348	928,247	1,214,545	1,069,567
71,248	28,393	24,661	23,354	7,044	5,885				
$7,913	$1,277		$7,428		$11,894	$2,562	$3,865	$2,392	$1,097
					2,644	7,410	6,952	9,127	6,657
964,557	183,741	74,557				91,037	97,235	52,638	
658	658	1,100					69,918		
10,931	10,567	3,091				14,535	6,011		
		340	2,153		4,435				
573	155	20	293	496	859	643	965	543	766
	16,198	530			5,000		104,616		431,223
13,196	690	6,261	5,287	12,765	9,869	25,997	30,671	33,800	861,176

	1859.	1860.	1861.	1862.	1863.	1864.	1865.	1866.
Bran and shorts, value.					$639			
Barley, prepared, value,			$350	$270				
Barley, bushels,					194			
Mill feed, tons,			40					
Grain, other, value.			$2.916	$793				
Steam engines, number,								
Stoves, value,				$70				
Sheepskins, number.								
Saddlery and harness, value,		$589	$763	$1,644	$1,142			
Safes, number.								
Safes, value,			$60					
Scales, value,			$382	$463	$991			
Sewing machines, number,					21			
Sewing machines, value,			$1,005	$1,524				
Shingles, number	189,000	221,000	7,000	625,000	111,000			
Skins and furs, value,	$40,435	$26,981	$64		$18,575			
Shells, value,								
Skirts, value,			$1,065					
Segars, number,								
Snuff, pounds,		2,617	957	4,986	10,781			
Soap, pounds,	1,315,377	942,438	899,999	462,396	427,018	134,732	63,250	55,284
Soap, perfumed, value,								
Silverware, value.				$100	$18			
Spars, masts, etc., value,			$130	$3,016				
Spirits from grain, gallons,	1,700	2,245	1,930	105	1,912			
Spirits, other, gallons,		8,574	559	1,822	3,746			
Spirits of turpentine, gallons.	24,888	18,139	3,566	1,023	206			
Starch, boxes,			308	1,761				
Starch, pounds.					32,559			
Sand and ballast, value,					$952			
Salt, bushels,		1,000			1			
Staves, etc., number,	1,700	4,000	2,156,000	6,025,000	12,533,000			
Staves, value,								
Shooks, number,		177,976	114,599	25,397	60,421			
Shooks, value,								
Hoops, number,			853,000	1,164,000	1,408,000			
Hoops, bundles,			66,647	47,243				
Headings, value,				$1,476				
Stearine, pounds.				866	4,705			
Seeds, value,				$1,282	$173			
Stoves, number,			78					
Sugar, brown, pounds,		39,461	158,699		48			
Sugar, refined, pounds,	117,181	186,396	941	49,119	59,744			
Shoes, pairs.								
Surgical and dental instruments, value,			$211					
Sheep, number,				164				
Steel, pounds,					150			
Steel manufactures, value,					$128			
Sheets, value,					$1,391			
Timber, value,					$23,728			
Timber, oak, tons,				13				
Tacks, boxes,			10					
Tallow, pounds,	870,247	2,831,012	4,571,464	6,252,051	6,594,987	4,155,469	2,016,900	
Tar, barrels,	440	324	574	200				
Tar and pitch, barrels,					113			
Tar and rosin, barrels,								
Tinware, value,	$700	$1,011	$226	$1,878	$54			
Tobacco manufactures, value,								
Tobacco, leaf, hogheads,	798	615	509	483	394			
Tobacco, leaf, pounds.								
Tobacco, leaf, bales,	514	268	470	338	1,117			
Tobacco, leaf, cases,	269	92	87	271	245			
Tobacco, manufactured pounds,		313,412	141,705	154,579	172,680			
Toys, value,			$7					
Treenails, number,			15,000	30,000				
Trunks, value,		$21	$100	$171	$445			
Type, value,	$2,329	$3,176	$562					
Umbrellas, value,		$153	$137	$114	$308			
Varnish, gallons.				322	382			
Vinegar, gallons,	107,253	99,571	123,261	109,489				
Vegetables value					$20			
Wagons and carts, value,			$3,366	$2,997	$1,104			
Wax, pounds.		4,327	2,875		12,400			
Wearing apparel, value,	$2,767	$24,711	$1,244	$5,675	$49			
Wheat, bushels,	53,794	718,810	2,106,515	1,955,582	630,452	526,448	9,945	26,034
Wheat flour, barrels,	162,041	295,463	462,769	470,901	315,029	294,708	134,917	78,735
Window sash and blinds, value.			$1,738	$189	$30			
Window shades value			$71					
Wire work, etc., value,			$255					

1867.	1868.	1869.	1870.	1871.	1872.	1873.	1874.	1875.	1876.
$13,155	$18,100	$3,943	$4,037		$788	$279	$991	$7,918	$9,479
			13	4					27
			$715						
8									
$556	$220	$670							
	2								
$359	$170	$323	$3,819	$11,742	$10,229	$11,388	$18,986	$54,981	$36,461
98,000	105,000	100,000	292,000						
									$4,325
							74,000		
157,272	141,915	1,000	3,324			3,642	3,600		
$416		90,400	126,255	43,369	48,873	37,280	90,151	144,532	107,365
	$455								
$874	$600								
37,968	37,968	30				2,686			
	2,265	741	235	4,722	19,839	29,835	14,266		
37,505	10,480	28,000	6,440	53,423	5,160	172,389	64,550	191,520	
3,540									
52,000	99,000								
$2,650,									
$692,588	$843,973	$669,328							
4,249,000	4,448,000								
	$282		$11,150	$11,767	$471	$29,876	$7,911	$8,635	$28,843
								327,082	
	935	300						103,904	251,646
		397							
14,470	14,470								
	$250								
3,184,566	1,048,519	1,073,380	206,332	4,700,049	4,426,488	10,965,866	9,126,657	10,455,457	15,429,724
110	110					1,441			
		167			85				
								1,834	7,178
		$140							
	$2,173	$4,492	$3,667	$1,739	$4,391	$2,154	$21,171	$10,239	$60,200
44,970	114,420	159,108	195,456	570,642	761,198	9,885,960	9,878,159	7,004 819	15,269,164
213,094	288,864								
6,638	600	1,534		3,500		4,541			
$1,434	$3,072	$11,511	$6,389	$11,178	$15,327	$16,685	$24,611	$15,876	$9,459
15,228		12,416	1,680	5,330	20,649	2,120	17,467	14,793	4,756
$250	$8,720	$1,100				$5,648	$2,800	$5,185	$2 236
43,697	56,835	941,927	374,300	1,153,167	412,761	1,938,310	3,289,532	3,302.054	2,987.704
54,809	64,682	151,678	121,910	136,145	113,036	142,386	185,698	160,748	192,433

	1859.	1860.	1861.	1862.	1663.	1864.	1865.	1866.
Woodenware, value. . . .	. . . . .	. . . . .	$910	. . . . .	$554	. . . . .	. . . . .	. . . . .
Wooden house frames, value.	. . . . .	. . . . .	$9,992	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Wood manufactures, value.	$308.583	$41,005	$9,860	$3,455	$105,985	. . . . .	. . . . .	. . . . .
Wool. pounds.	. . . . .	. . . . .	1,039	. . . . .	4,933	. . . . .	. . . . .	. . . . .
Wool. manufactures of. value.	. . . . .	. . . . .	. . . . .	. . . .	$26	. . . . .	. . . . .	. . . . .
Watches, value.	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Wine, gallons.	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Zinc ore, value.	. . . . .	$9,000	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Zinc, value.	. . . . .	. . . . .	$700	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Zinc, oxide, hogsheads. .	. . . . .	. . . . .	103	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Zinc, oxide, pounds. . . .	. . . . .	. . . . .	. . . . .	230,000	. . . . .	. . . . .	. . . . .	. . . . .
Manufactures unenumerated, value.	$151.134	$120.254	$3,528	$9,420	. . . . .	. . . . .	. . . . .	. . . . .
Not manufactured, unenumerated, value.	$76.182	$58,545	$1,555	$1,829	. . . . .	. . . . .	. . . . .	. . . . .
Unenumerated articles, value, ...	. . . . .	. . . . .	. . . . .	. . . . .	$49.271	. . . . .	. . . . .	. . . . .

1867.	1868.	1869.	1870.	1871.	1872.	1873.	1874.	1875.	1876
. . . . .	. . . . .	$375	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
$8,740	$16,354	$1,606	$1,070	$60,310	$17,835	. . . . .	$39,326	$52,602	$99,698
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	146,029	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	$3,381	$7,895
$190	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	160	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	$20,664	. . . . .	. . . . .	. . . . .	. . . . .	$20,864	$25,651	$28,604	$11,249
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
$14,448	$47,581	. . . . .	$73,437	. . . . .	$126,694	. . . . .	. . . . .	. . . . .	. . . . .

	1877.	1878.	1879.	1880.	1881
Acids, value,					
Acids, pounds,	91,780	7,444	2,145	7,948	29,915
Agricultural implements, value,	$10,472	$8,753	$6,626	$4,766	$4,442
Animals, value,	$134,610				
Anthracine, barrels,	189				
Plows, etc., number,			2	31	26
Horse-powers, number,		16			
Fanning mills, number,					
Hogs, number,		2,393	1,194		
Cattle, number,		4,156		2,474	
Mules, number,					
Horses, number,		2	51		
Sheep, number,		3,759	3,221		22
Animals, other, and fowls, value,		$432	$89	$67	
Ashes, pot and pearl, pounds,		6,500	1,440		
Painting and statuary, value,					
Beeswax, pounds,					
Bark, value,	$7,883	$2,010	$5,802	$6,244	$6,862
Bags, value,					
Beer, etc., gallons,	2,500	2,896	151	998	3,289
Beer, bottled, dozen,		2,582	2,795	2,564	1,382
Blacking, value,		$392	$430	$377	
Billiard apparatus, value,					
Bone black, pounds,	258,465	249,471	425,712	831,680	225,913
Bones, value,					
Bones, pounds,	5,906				
Bones and bonedust, cwt.,		5,135	1,234	334	
Books, etc., value,	$9,367	$5,274	$10,693	$30,928	$26,447
Brass, manufactures of,		$3,598	$114	$53	$127
Barley, bushels,		1,412			
Bread and biscuit, pounds,	157,999	286,736	147,128	303,265	132,074
Corn, bushels,	10,271,423	19,868,713	14,698,000	18,130,235	6,646,616
Cornmeal, barrels,	31,383	28,960	15,777	19,546	15,765
Oatmeal, pounds,					
Oats, bushels,	24,898	55,061	12,741	31,104	8,402
Rye, bushels,	188,613	112,567	509,393	5,803	
Rye flour, barrels,	328	1,413	12		20
Wheat, bushels,	2,546,857	8,854,301	17,504,607	12,217,039	8,910,275
Wheat flour, barrels,		183,709	201,818	250,063	176,018
Other small grain and pulse, value,	$11,042	$2,507	$2,916	$3,770	$5,748
Maizena, value,		$187,893	$205,174	$682,166	$35,055
Bricks, building, value,					
Bricks, building, number,	475,000	387,000	376,000	201,000	77,000
Bricks, fire, value,					
Brooms and brushes, value,	$2,473	$596	$3,424	$142	$110
Candles, pounds,	29,976	36,252	9,575	6,525	4,045
Carriages, etc., value,	$17,184	$31,145	$20,746	$19,017	$8,960
Cars, railroad, number,	355	305	620	190	334
Clocks, value,		$491	$2,990	$2,597	$705
Coffee and spices, value,		$4,229	$3,069	$4,528	$130
Coal, anthracite, tons,	82,963	17,887	15,703	20,062	20,570
Coal, bituminous, tons,		53,688	36,932	35,407	37,203
Copper ore, tons,					
Copper manufactures, value,	$54,226	$96	$463	$178	$1,232
Copper ingots, pounds,					
Cordage, pounds,	139,476	114,743	58,443	2,918	19,040
Cordage, value,					
Cotton bales, number,			26,938	48,532	68,942
Cotton, pounds,	10,681,119	14,538,168			
Cotton, white, yards,				30,647	25,148
Cotton, colored, yards,		3,476	67,673	79,930	22,098
Cotton manufactures, value,	$140,278	$99,020	$96,151	$93,103	$88,693
Carbon, tons,	30				
Cloverseed, pounds,			244,698	83,314	204,465
Cotton seed, pounds,				884,800	
Casings for sausages, value,					
Dentists' materials, value,	$43,985				
Drugs and chemicals, value,	$131,525	$83,314	$92,368	$74,346	$35,139
Dye-stuffs, value,	$2,484	$30,515	$94,850	$23,604	$93,118
Roots, herbs and barks, value,					
Medicines, etc., value,					
Earthenware, etc., value,	$1,285	$1,410	$917	$283	$817
Chinaware, value,					
Electrotype plates, value,					
Flax, manufactures of, value,					
Fancy articles, value,	$1,044	$119	$2,375	$906	$2,087
Apples, dried, pounds,		13,531	219,916	49,830	151,010
Apples, green, bushels,		19,351	7,561	7,191	28,327
Apples, green, barrels,					
Fruit, other, value,	$97,747	$8,691	$6,258	$20,516	$13,645
Fruit preserved in cans, value,		$2,177	$576	$605	$1,045
Furs and skins, value,	$1,216,896	$30,635	$164,155	$109,454	$128,442
Feathers, value,	$33,605				
Glucose, pounds,					
Grease, value,					
Grease, pounds,	297,091				
Gold and silver coin, value,	$42,930				$1,900
Gas fixtures, value,	$2,352	$324	$1,192	$996	$957
Glassware, value,	$2,958	$7,485	$3,454	$1,212	$2,717

1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
. . . . .	$4,556	$1,581	$1,798	$783	$1,019	$3,511	. . . . .	$319
55,093	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
$5,654	$11,632	$17,138	$6,902	$1,207	$1,005	$1,500	$11,589	$21,318
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
31	21	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	24	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	17	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
2	. . . . .	. . . . .	. . . . .	. . . . .	2	2	33	. . . . .
. . . . .	372	1,081	7,057	1,588	2,594	7,037	13,564	16,719
. . . . .	24	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	14	36
. . . . .	. . . . .	1	. . . . .	1	. . . . .	24	18	54
4	500	273	. . . . .	. . . . .	188	101	2	50
$55	. . . . .	$100	. . . . .	$335	$47	$80	$92	$294
. . . . .	$3,113	$5,615	$11,119	$2,465	$875	$2,186	$1,779	$3,218
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	$115,527
$6,063	$47,576	$49,234	$66,511	$39,362	$16,849	$31,343	$26,219	$22,716
. . . . .	. . . . .	. . . . .	$100	$776	$2,301	$859	$1,321	$1,231
80	1,160	4,316	830	450	. . . . .	. . . . .	. . . . .	215
14	. . . . .	350	50	60	903	503	982	686
. . . . .	$260	$486	$566	$353	$1,739	$1,086	$1,956	$2,239
. . . . .	. . . . .	. . . . .	. . . . .	24	. . . . .	. . . . .	$170	. . . . .
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	$2,818	$1,093	. . . . .	$14	$2,051	$1,265	$4,705
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	35	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
$26,535	$34,453	$31,507	$31,709	$29,880	$20,633	$27,874	$41,888	$44,609
$1,007	$1,684	$2,780	$678	$1,642	$6,204	$1,688	$1,945	$6,587
833	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
42,404	158,028	462,108	18,032	97,682	70,390	849	4,415	14,863
866,641	5,435,643	1,750,266	6,028,564	1,923,862	2,176,107	916,352	3,826,217	16,816,795
5,857	15,204	12,744	16,709	6,289	3,224	970	2,266	4,863
. . . . .	4,551,030	4,619,554	2,511,640	1,234,500	228,150	1,120,400	1,460,160	250,880
6,533	8,483	34,762	348,207	10,630	5,497	1,421	3,409	12,587
. . . . .	8,782	. . . . .	. . . . .	. . . . .	17,752	. . . . .	21,371	. . . . .
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
5,900,268	4,372,777	5,696,755	3,369,205	6,141,167	8,731,418	1,019,452	1,126,925	699,274
192,289	362,867	321,583	694,207	386,162	603,093	670,439	554,370	834,440
$2,321	$67,550	$34,107	$39,417	$10,686	$1,025	$273	$483	$1,307
$88,767	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	. . . . .	$5,000	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
91,000	117,000	22,000	. . . . .	51,000	2,000	30,000	50,000	3,000
. . . . .	$328	. . . . .	$1,115	$85	$1,400	$254	$55	$100
$210	$1,203	$171	$1,358	$425	$727	$524	$255	$294
. . . . .	6,000	3,466	. . . . .	200	1,364	. . . . .	600	470
$10,059	$8,702	$6,000	$2,775	$450	$73,257	$5,235	. . . . .	$107,549
129	237	266	75	279	160	428	. . . . .	489
$531	$46	$930	$400	$50	$120	$439	. . . . .	$18
$66	$208	$66	. . . . .	$22	$169	$7	. . . . .	$169
24,030	57,045	15,831	16,345	13,130	10,086	14,952	. . . . .	20,171
71,276	46,318	38,428	64,161	52,011	81,894	156,405	. . . . .	279,242
. . . . .	1,245	805	. . . . .	53	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	$3,899	$607	$45,002	$825	$616	$82,603	. . . . .	$20
. . . . .	14,346	. . . . .	. . . . .	. . . . .	233	. . . . .	. . . . .	. . . . .
1,650	1,047	29,692	17,475	33,167	42,756	21,991	23,096	6,067
. . . . .	. . . . .	. . . . .	$2,070	. . . . .	$307	. . . . .	. . . . .	. . . . .
99,120	105,652	110,904	51,737	65,003	64,796	67,577	. . . . .	34,282
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	. . . . .	. . . . .	562	5,705	1,800	. . . . .	1,999
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	14,723	. . . . .	. . . . .	11,633
$97,696	$131,117	$78,441	. . . . .	$19,827	$23,843	$36,325	. . . . .	$14,722
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
195,337	600,373	58,188	48,997	. . . . .	118,100	74,518	356,100	730,005
. . . . .	. . . . .	. . . . .	5,000	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	$590	$969	$3,262	$3,443	$6,064	$6,807	. . . . .	$8,979
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
$75,382	$52,216	$18,330	$4,604	$19,832	$11,096	$4,780	. . . . .	$14,091
$63,497	$35,600	. . . . .	. . . . .	$13,458	$48,302	$67,329	. . . . .	$45,085
. . . . .	$125	$958	$1,711	$2,639	$2,130	$1,160	. . . . .	$397
. . . . .	. . . . .	. . . . .	$15,736	$2,290	$445	$5,358	. . . . .	$6,374
$744	$3,804	$1,731	$333	$89	$1,594	$267	. . . . .	$423
. . . . .	. . . . .	. . . . .	$800	. . . . .	$29	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	$30	. . . . .	. . . . .	$1,160	$114	$445	. . . . .
. . . . .	. . . . .	$70	. . . . .	$305	$946	$1,589	$1,124	$747
$298	$3,180	$1,561	. . . . .	$592	$2,113	$1,014	. . . . .	$5,628
75	1,300	1,099	120,425	23,130	184	72,000	668 320	17,005
4,099	10,456	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	668	561	1,782	871	626	1,733	7,409	227
$17,337	$16,436	$8,446	$782	$573	$2,019	$42	. . . . .	$953
$5,570	$562	$31,490	$463	$2,218	$2,816	$22,791	$12,348	$11,149
$158,116	$76,680	$42,030	$11,244	$14,142	$15,136	$5,652	$31,451	$25,700
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	. . . . .	. . . . .	3,942	124,207	. . . . .	1,198 235	4 350,339
. . . . .	$5,522	$23,245	$15,310	$13,115	$9,606	$27,516	$33,553	$143,210
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	. . . . .	$3,000	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
$652	$91	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
$941	$2,089	$3,433	$1,211	$2,207	$2,785	$1,821	$3,974	$2,507

	1877.	1878.	1879.	1880.	1881.
Glue, pounds	9,748	152,455	109,554	5,693	26,170
Gold and silver leaf, value		$51			
Hair, unmanufactured, value		$7,670	$4,544	$5,982	$511
Hair, manufactured, value	$41,849	$8,535	$19,962	$13,816	$19,176
Hats, value		$244	$214	$509	$79
Hay, tons		72	10	12	180
Hemp, unmanufactured, cwt.		13			
Hemp, manufactures of, value	$2,187	$5,315	$22	$2,447	$3,679
Hides and skins, value	$86,459	$51,203	$13,296	$9,650	$2,880
Honey, value					
Hops, pounds	287,398	456,720	352,317		93,448
Horns, value	$1,197				
Ink, value					
Ice, tons			34	30	
India rubber manufactures, value		$3,945	$1,484	$1,190	$6,881
Iron, pig, cwt.		3,247	112		
Iron, sheet, pounds	381				370
Iron, bars, pounds		217,563	104,503	6,479	120,579
Iron, railroad bars, cwt.	5,077	97,875	14,416	10,156	
Iron castings, value		$23,652	$4,382	$5,312	$4,833
Iron, railroad cars, cwt.	35,327				
Iron, car wheels, number	1,357	1,163	1,662	1,865	2,855
Iron, stoves, etc., value		$5,106	$617	$2,505	$811
Iron, stoves, etc., number					
Iron, locomotives, number		54	18	16	14
Iron, stationary engines, number	50	4	3	5	
Iron, boilers for engines, value	$27,205	$17,826	$24,882	$7,288	$24,392
Wire, pounds					
Iron, machinery, value	$262,312	$95,760	$148,026	$68,406	$100,028
Iron, nails and spikes, pounds	479,280	565,952	346,693	226,442	245,200
Iron, manufactures of, value	$151,258	$178,619	$127,566	$158,516	$140,084
Steel bars, pounds		7,195	6,927	10,669	12,506
Cutlery, value					
Edge tools, value		$459	$2,741	$2,678	$1,207
Files and saws, value		$5,133		$322	$423
Muskets and pistols, value		$400	$628	$483	$1,507
Steel rails, tons					
Steel railroad bars, cwt.		4,238			
Steel, manufactures of, value		$1,241	$8,021	$18,695	$32,317
Boiler plate, pounds			6,076		
Hoop plate, pounds			20,239	800	
Iron ore, tons					
Junk, etc., cwt.		10			8
Junk, value				$15	
Jewelry, value	$5,500		$890	$33	$9,293
Jeweler's ashes, value	$3,600				
Lamps, value		$389	$295	$100	$67
Lead and manufacturers of, value		$2,455	$453		$530
Boots and shoes, pairs		52,354	804	1,586	622
Leather, upper, value					
Leather, sole and upper, pounds		975,904	587,335	438,926	2,006,372
Leather, fine, value		$703	$47,161	$79,154	$130,408
Leather, saddlery, etc., value		$1,668	$850	$4,012	$2,894
Leather manufactures, other, value	$263,569	$2,457	$1,369	$868	$79
Lime and cement, barrels			350	29	10
Guano, tons			19	348	
Medals, value	$1,810				
Manganese, tons	144				
Marble and stone, rough, value		$1,146		$492	
Marble and stone, manufactured, value	$26,375	$50,144	$15,961	$8,548	$2,104
Manures, etc., value		$4,458	$24,500	$250	$22,877
Matches, value	$2,027	$105	$26	$80	$100
Mathematical instruments, value	$2,484	$210	$6,550	$902	$100
Nuts, value					
Organs, value		$450	$218		$200
Organs, number				4	
Pianos, value		$350	$600		$1,160
Pianos, number				3	
Musical instruments, value	$2,235		$458		$200
Electrical instruments, etc., value					
Rosin, barrels		4,368	3,310	7,312	1,139
Rosin and turpentine, barrels	3,101				
Tar, barrels					
Tar and pitch, barrels	5,965	4,160	1,968	1,796	165
Turpentine and pitch, barrels					
Oilcloths, value	$7,154				
Oil-cake, pounds	14,285,664	15,533,110	25,070,527	22,594,178	22,600,237
Oil, petroleum, crude, gallons	5,220,501	5,244,184	3,241,503	4,731,509	4,877,681
Oil, petroleum, refined, gallons	41,280,536	67,249,735	82,370,211	48,391,157	102,810,452
Oil, naphtha, gallons	2,510,375	2,967,452	2,750,027	1,046,384	2,935,638
Oil, lubricating, gallons		37,493	41	115,654	184,578
Oil, lard, gallons	83,747	237,511	268,479	53,044	18,407
Oil, other animal, gallons					
Oil, neatsfoot, gallons		2,374	1,125		50
Oil, sperm, gallons		170			
Oil, whale, gallons		33,936	76,636	69,652	
Oil, cottonseed, gallons		2,839			
Oil, linseed, gallons		396	503	558	90
Oil, residuum, barrels	9,706	13,438	9,123	3,726	

1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
14,798	8,174	11,673	44,226	18,879	4,898	25,939	8,891	2,544
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
$5,498	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
$11,271	$43,792	$71,398	$75,436	$22,421	$3,663	$38,005	$14,220	$43,825
$175	$203	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
22	21	44	17	36	29	27	42	30
. . . . .	153	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
$1,608	$60	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
$1,100	$12,920	$18,531	$51,564	$590	$1,181	. . . . .	$2,553	$8,149
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	$1,797
873,406	120,258	196,600	1,841,857	120,921	80,172	559,914	275,593	399,911
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	. . . . .	. . . . .	$121	$159	$2,503	$19	$11
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	74	161	. . . . .	. . . . .
$7,004	$6,163	$6,940	$7,133	$8,577	$12,715	$12,678	$27,560	$17,259
9,120	1,120	. . . . .	. . . . .	1,000	. . . . .	300	. . . . .	4
. . . . .	48,000	. . . . .	. . . . .	828	37,807	33,501	23,227	36,594
. . . . .	8,000	. . . . .	8,619	8,838	26,624	71,650	37,443	79,916
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
$5,263	$7,856	$2,231	. . . . .	$3,439	$3,918	$8,634	$6,300	$1,962
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
1,915	866	1,956	1,397	1,846	698	846	560	241
$1,548	$950	. . . . .	$315	$552	$729	$2,621	$3,735	$3,925
. . . . .	. . . . .	17	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
28	46	98	1	13	8	16	75	2
. . . . .	1	1	. . . . .	1	. . . . .	. . . . .	1	. . . . .
$18,860	$10,815	$52,140	$5,660	$1,200	$2,850	$1,209	$1,452	$1,481
. . . . .	. . . . .	53,892	11,135	9,288	15,229	16,669	14,654	12,789
$134,682	$80,603	$76,801	$59,709	$115,852	$40,681	$61,435	$123,350	$61,187
168,341	128,800	60,910	88,370	105,054	98,132	92,400	79,317	65,977
$113,793	$47,314	$20,606	$8,520	$7,692	$66,682	$46,924	$46,348	$41,301
. . . . .	. . . . .	. . . . .	2,240	6,333	22,200	25,774	. . . . .	. . . . .
$580	. . . . .	. . . . .	. . . . .	$8	$109	$15	$12	$16,586
$1,203	$278	$569	$238	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
$219	$294	$2,403	$6,205	$5,713	$7,374	$3,121	$8,317	$12,324
$230	$27,805	$125	. . . . .	$20	$941	$250	$858	$61
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	284	205	505
. . . . .	. . . . .	. . . . .	800	3,220	. . . . .	. . . . .	10½	231
$30,614	$55,601	$52,516	$30,272	$83,814	$57,154	. . . . .	. . . . .	$55,207
. . . . .	. . . . .	. . . . .	. . . . .	6,900	4,808	8,214	. . . . .	13,541
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	3,977
. . . . .	. . . . .	34	48	. . . . .	. . . . .	8	. . . . .	. . . . .
. . . . .	25	59	67	39	226	2	. . . . .	62
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
$12,793	$11,996	$8,389	$4,400	$2,158	$2,711	$1,191	$3,338	$1,888
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
$502	. . . . .	$262	$72	$503	$2,242	$432	$860	$1,055
$345	. . . . .	$19,715	$11,047	$14,829	$28,987	$22,244	$24,790	$26,291
432	1,053	. . . . .	420	433	2,930	320	1,306	2,204
. . . . .	. . . . .	$43,642	$6,119	$22	. . . . .	. . . . .	$30,695	. . . . .
19,220	11,839	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	3,505
$117,913	$99,906	$75,132	$97,300	$68,700	$22,800	$77,500	$69,500	$91,750
$933	$1,185	. . . . .	$1,065	$282	$5,188	$220	$178	$521
$3,672	$378	. . . . .	$1,660	$24,502	$106,972	$87,014	$99	$31,891
6	13	60	53	805	283	461	340	422
. . . . .	76	277	. . . . .	9	455	5	. . . . .	57
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	$25	$9	. . . . .	$226	. . . . .	. . . . .	. . . . .	. . . . .
$444	$6,059	$2,575	$957	$716	$553	$3,323	$3,398	$1,034
$42,063	$682	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	$1,752	$725	$1,238	$20	$109	. . . . .	$151	$128
$345	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
$425	$1,259	. . . . .	. . . . .	. . . . .	$4	$5	. . . . .	. . . . .
. . . . .	. . . . .	10	2	3	11	3	2	56
$200	$1,395	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	4	5	2	. . . . .	6	. . . . .	7
. . . . .	$1,229	$2,200	$162	$535	$1,140	$1,182	$2,386	$1,059
. . . . .	. . . . .	$2,634	$8,901	$708	$2,641	$4,732	$2,714	$206
3,080	12	2,677	1,653	1,430	1,379	775	1,320	1,277
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	. . . . .	15	133	60	51	111	153
3,348	188	266	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	. . . . .	25	315	614	2,623	25	98
21,229,468	34,820,897	38,538,286	32,908,490	41,101,207	32,740,341	36,578,989	52,536,702	56,623,423
4,961,890	6,740,567	18,398,375	33,170,367	34,154,657	38,451,283	35,681,920	33,020,649	47,267,290
78,471,280	68,615,540	96,060,347	109,568,957	112,651,867	118,965,008	93,715,331	124,504,487	116,216,798
1,356,021	1,520,965	3,949,789	5,501,844	5,056,769	4,624,297	5,228,673	2,381,028	1,792,704
1,154,496	712,696	1,016,166	482,664	288,672	659,914	2,336,501	1,623,385	3,195,616
13,025	13,668	4,984	6,155	21,327	2,095	9,945	2,533	5,622
. . . . .	. . . . .	. . . . .	. . . . .	8,855	12,400	4,798	. . . . .	265
. . . . .	2,275	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
10	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	. . . . .	500	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
475	1,941	5,436	. . . . .	584	. . . . .	. . . . .	. . . . .	18,200
. . . . .	. . . . .	232	122	111	445	137	506	. . . . .
9,599	5,547	13,709	32,957	10,037	36,779	3,900	334	867
								1,025

	1877.	1878.	1879.	1880.	1881
Oil, volatile or essential, value	$3 920	$322	$3,377	$2,935	$605
Oil, turpentine, crude, value					
Ore, gold and silver, value					
Ordnance stores, value	$7,850				
Cartridges and fuses, value		$341	$320		$1,263
Gunpowder, pounds		15,750	500	109,500	56,000
Paraffine and paraffine wax, pounds					
Paints, value	$1,942	$846	$1,400	$135	$1,038
Paintings and engravings, value	$30,472	$620	$3,431	$4,819	$9,215
Paper and stationery, value	$22,219	$16,127	$18,574	$19,447	$20,556
Perfumery, value		$937	$1,122	$643	$55
Plated-ware, value		$90	$1,019	$800	$600
Printing presses and material, value		$2,823	$6,452	$15,760	$13,022
Plaster, calcined, barrels	502				
Butter, imitation of, pounds					
Bacon and hams, pounds	59,288,287	91,389,285	80,686,178	83,699,389	68,243,084
Beef, salt, pounds	4,567,874	4,260,410	5,322,057	4,809,387	3,115,270
Beef, other, cured, pounds					
Beef, fresh, pounds	12,790,870	5,995,755	11,133,861	6,335,470	2,392,200
Beef, canned, value					
Beef, canned, pounds					
Butter, pounds	1,383,009	1,347,251	605,529	538,525	130,897
Cheese, pounds	1,654,428	2,488,054	1,279,629	240,722	2,472 571
Fish, pickled, barrels		1,015	2,135	869	483
Codfish, pounds					
Fish, other, cured, value	$33,911	$5,682	$731	$1,146	$6,053
Codfish, dried, pounds					
Salmon, canned, value			$112		$21
Condensed milk, value					
Lard, pounds	8,190,580	18,058,998	12,915,027	13,640,650	4,776,840
Meats, preserved, value	$46,626	$25,120	$37,512	$11,495	$25,578
Meats, all other, value					
Mutton, fresh, pounds		67,675	536,015	290,500	141,990
Oysters, value	$4,752	$17,172	$3,981	$2,674	$2,274
Pickles and sauces, value		$194			$5
Pork, pounds	2,086,361	1,238,410	896,797	1,267,239	839,725
Onions, bushels		46	184	286	110
Peas and beans, bushels					
Potatoes, bushels		254	1,405	3,647	1,428
Vegetables, other, value	$12,324	$5,999	$6,982		$35
Vegetables, preserved, value		$10 844	$73,412	$27,677	$16,730
Quicksilver, pounds				42,520	
Rags, pounds	21,683	12,064	20,195		4,732
Rice, pounds		28,667	30,815	1,830	528
Straw, manufactures of, value					
Silk manufactures, value					
Salt, bushels		686		175	
Salt, pounds					
Scales, etc., value		$825	$166	$122	$1,495
Seeds, value	$25,232	$52,662	$28,631	$7,122	$7,536
Sewing machines, value	$32,937	$24,792	$23,260	$10,173	$13,494
Soap, toilet, value		$364	$652	$26	$540
Soap, other, pounds	301,487	425,944	675,914	219,174	270,256
Spirits from grain, gallons		411	3 464	446	8,375
Spirits of turpentine, gallons		1,014	1,049	1,002	250
Starch, pounds	18,889	194,159	82,068	26,880	100
Sugars, brown, pounds		50,589			
Sugars, refined, pounds	456,688	1,114,418	406,771	59,215	84,289
Candy, value		$441	$3,066	$6,832	$1,990
Shells, value	$2,650				
Molasses, gallons	81,282		2,368,773	672,326	782,432
Tallow, pounds	10,817,623	11,848,525	9,201,599	8,490,058	6,534,591
Tin, manufactures of, value		$1,196	$565	$25	$209
Tobacco leaf, pounds	10,962,753	12,429,316	9,564,171	10,092,524	4,412,333
Tobacco, manufactured, value	$97,734	$143,672	$182,494	$66,791	$95,346
Cigars, number		4,000	52,000	52,000	43,000
Cigarettes, number					
Snuff, pounds		1,980	515	54,000	2,600
Telegraph apparatus, value	$2,466				
Timothy seed, pounds					
Trunks and valises, value		$35	$78	$848	$662
Umbrellas, etc., value		$3,131	$3,216	$132	$255
Vessel					
Varnish, gallons		629	345	77	
Vinegar, gallons		2,109	828		50
Watches, value		$146	$200		
Wax, pounds	$8,748	182	5,883	8,385	
Wine, gallons		41	4,045	166	502
Wine, dozen					
Wood, etc., boards, feet	6,857,000	5,616,000	5,107,000	3,472,000	2,271,000
Boards for lining vessels, feet		1,331,000	43,000		
Laths, number		110,000	15,000	24,000	1,000
Shingles, number		16,000	146,000	59,000	55,000
Shooks-box, value		$3,345			$202,899
Shooks-box, number					
Staves and headings, value		$276,483	$341,319	$327,321	
Hogsheads and barrels, empty, number		34,253	63,443	57,876	31,606
Hogsheads and barrels, value					
Lumber, all other, value		$40,129	$212	$44,508	$135,039

1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
$450	$63	. . . . .	. . . . .	$237	$31	$1,170	$6,844	$331
$333	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	$274,040	$1,445	. . . . .	. . . . .	. . . . .	$150	. . . . .	. . . . .
. . . . .	. . . . .	$465	$155	$1,403	$3,348	$5,620	$5,612	$992
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	86,856	. . . . .	. . . . .	50	. . . . .	500	201
. . . . .	949,749	1,212,996	2,746,423	3,440,244	3,063,326	5,312,748	5,407,200	12,004,886
$354	$160	$2,930	$1,004	$5,730	$12,656	$13,388	$13,589	$59,414
$141,520	$7,140	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
$20,151	$26,257	$22,874	$22,194	$16,288	$24,576	$12,740	$32,267	$25,821
$51	. . . . .	$1,640	$956	$1,569	$2,831	$1,943	. . . . .	$638
$165	$600	$321	$231	$320	. . . . .	. . . . .	. . . . .	. . . . .
$7,398	$9,544	$2,775	$3,300	$1,301	$1,425	$975	. . . . .	$1,350
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	8,450	6,000	1,800	14,150	1,009	. . . . .	59,550
61,219,923	56,520,719	37,485,115	53,093,035	47,457,845	24,369,087	28,734,962	29,018,809	33,579,411
2,028,810	3,333,315	. . . . .	4,253,287	3,197,578	3,110,192	4,017,609	5,980,863	3,939,884
. . . . .	. . . . .	. . . . .	. . . . .	1,709	169,123	94,424	79,428	90,060
. . . . .	4,554,020	2,575,100	9,954,270	12,527,635	6,129,450	7,301,000	18,319,600	12,766,700
. . . . .	$21,255	$168,459	$232,471	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	. . . . .	. . . . .	4,758,906	1,261,971	2,608,390	955,625	2,095,431
186,763	160,683	242,154	164,205	65,806	136,805	53,016	116,026	64,348
1,503,857	2,570,857	496,169	1,068,697	836,537	356,294	225,214	927,786	314,127
690	660	312	847	769	634	13	1	6
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	450	14,667
$585	. . . . .	$169	. . . . .	. . . . .	$189	$678	. . . . .	$371
. . . . .	5,655	23,202	9,203	21,930	9,367	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	$768	. . . . .	$763	$2,287
. . . . .	. . . . .	$51	. . . . .	$19	$731	$15	$13	$159
3,946,037	4,730,177	11,102,359	11,160,073	8,515,539	11,349,706	9,505,207	9,166,340	14,035,759
$189,582	$33,610	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	$2,875	$2,276	. . . . .	$410	$244	$55	$631	$2,340
. . . . .	. . . . .	25,325	161,405	60,060	. . . . .	. . . . .	. . . . .	. . . . .
$6,927	$680	$100	$640	$424	$158	$534	$499	$93
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
441,960	1,011,420	746,959	631,396	1,427,021	1,761,727	456,400	508,586	1,186,824
21	12	165	. . . . .	16	68	. . . . .	3	71
. . . . .	. . . . .	1,493	300	282	985	44	450	246
576	768	890	90	2,968	157	166	210	287
$2,320	$5,934	$226	$762	$122	$88	$12	$12	$1,830
$33,635	$17,538	$10,347	$17,844	$21,529	$36,674	$80,487	$52,714	$99,625
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
19,654	23,833	98,388	400,678	3,009	26,558	51,807	20,416	38,355
. . . . .	315	. . . . .	. . . . .	840	5,936	. . . . .	250	200
. . . . .	. . . . .	$1,650	. . . . .	$24	$74	$122	$225	$129
. . . . .	$1,319	$3,618	$1,520	$331	$729	$177	. . . . .	$8,145
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	. . . . .	. . . . .	900	8,248	9,450	. . . . .	1,075
$784	$2,305	$503	$572	$685	$718	$734	$2,343	. . . . .
$3,386	$7,744	$8,725	$95,386	$85,002	$5,672	$5,222	$8,250	$8,227
$11,309	$9,782	$7,689	$4,422	$1,931	$3,131	$3,501	$1,938	$13,145
$59	$595	. . . . .	. . . . .	$267	$349	$500	$349	$524
201,236	425,019	444,694	1,060,934	1,366,975	935,674	1,764,400	2,355,079	2,549,356
47,038	75,507	34,369	3,436	510	189	208	135	152
701	1,044	435	50	901	4,215	2,020	551	2,344
3,600	24,000	20,990	28,200	1,828	94,638	55,695	82,690	599,829
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	1,077	. . . . .	. . . . .	. . . . .
36,404	13,486	73,239	7,900,578	34,531	39,440	19,434	4,039	584,782
$12,961	$10,481	$7,497	$6,724	$38,557	$13,494	$21,076	$18,892	$16,277
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
768,072	1,094,845	2,083,394	4,397,238	4,219,156	2,534,465	3,005,311	1,240,108	2,766,521
4,163,822	6,116,364	5,611,430	4,796,053	7,342,876	7,999,120	7,559,565	8,932,721	11,208,262
$596	$103	$704	$429	$255	$466	$3,943	$354	$3,426
7,546,268	11,160,883	7,807,648	15,274,038	18,286,102	8,887,463	7,776,555	14,432,616	14,288,510
$102,152	$80,950	$80,806	$121,382	$110,317	$54,525	$49,470	$69,720	$41,244
. . . . .	3,000,000	. . . . .	12,000	200	11,000	1,000	. . . . .	. . . . .
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	4,000	15,000	. . . . .	. . . . .
2,760	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
11,000	. . . . .	. . . . .	55,005	. . . . .	37,661	180,379	198,754	49,504
$1,110	$45	$92	. . . . .	. . . . .	$102	. . . . .	. . . . .	. . . . .
$770	$613	. . . . .	. . . . .	. . . . .	$8	. . . . .	. . . . .	. . . . .
. . . . .	1	. . . . .	. . . . .	. . . . .	. . . . .	1	. . . . .	. . . . .
130	. . . . .	40	10	60	15	307	. . . . .	. . . . .
. . . . .	1,059	130	. . . . .	. . . . .	184	696	. . . . .	. . . . .
. . . . .	. . . . .	. . . . .	$978	. . . . .	$342	$110	. . . . .	. . . . .
5,925	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	. . . . .	2	. . . . .	29	50	180	10
. . . . .	1	1	. . . . .	. . . . .	5	. . . . .	. . . . .	2
5,577,000	2,731,000	2,035,000	2,413,000	3,450,000	708,000	289,000	335,000	129,000
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
22,000	174,000	41,000	25,000	49,000	279,000	41,000	39,000	78,000
$223,470	$129,415	$77,650	. . . . .	. . . . .	. . . . .	$90	. . . . .	. . . . .
. . . . .	. . . . .	253	76,082	40,376	90,527	5,920	. . . . .	. . . . .
. . . . .	$152,685	$138,490	$153,321	$170,644	$133,550	$194,064	$225,915	$177,558
64,404	58,635	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	$125,379	$148,717	$252,405	$234,676	$215,773	$168,290	$175,429
$184,344	$89,194	$2,290	. . . . .	$20,557	$12,625	$20,692	$23,418	$107,390

	1877.	1878.	1879.	1880.	1881.
Hoops, value	. . . . .	$162,777	$244,282	$143,441	. . . . .
Logs, value	. . . . .	$8,832	$28,714	$16,941	$10,370
Timber, feet	. . . . .	484,000	. . . . .	. . . . .	. . . . .
Timber, all other, value	. . . . .	$15,030	$5,756	. . . . .	. . . . .
Furniture, value	. . . . .	$7,016	$11,919	$19,635	$48,802
Cooperage, value	$568,111	. . . . .	. . . . .	. . . . .	. . . . .
Palings, etc., number	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Joists and scantling, number	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Joists and scantling, feet	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Moulding, value	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Wearing apparel, value	$2,361	. . . . .	$3,544	$10,219	$6,002
Woodenware, value	. . . . .	$105	$1,438	$1,013	$1,672
Wood, manufactures of, value	$57,189	$41,589	$7,394	$15,526	$19,228
Wool, raw, pounds	. . . . .	. . . . .	. . . . .	11,290	4,951
Wool carpets, yards	. . . . .	361	180	30	. . . . .
Wool, manufactures of, value	$4,034	$7,266	$515	$3,328	$4,509
Zinc, manufactures, value	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Unmanufactured articles, all other, value	. . . . .	$84,826	$36,274	$40,704	$41,676
Manufactured articles, all other, value	$4,013	$294,716	$320,520	$254,240	$151,027

1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
. . . . .	$40,245	$86,878	$96,256	$56,639	$63,259	$49,160	$22,244	$8,681
$7,660	$21,186	$13,931	$1,620	$5,925	$17,350	$37,550	$32,986	$51,927
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	11,000
. . . . .	. . . . .	. . . . .	. . . . .	$33,191	. . . . .	. . . . .	. . . . .	. . . . .
$9,313	$9,423	$19,604	$12,459	$16,012	$20,689	$14,498	$15,931	$22,162
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	. . . . .	2,000	. . . . .	2,000	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	. . . . .	. . . . .	2,000	. . . . .	. . . . .	3,000	12,300
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	7,000	10,000	. . . . .	. . . . .
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	$1,848
$2,733	$3,650	$5,587	$4,401	$4,550	$3,959	$6,338	$3,748	$7,251
$778	$2,827	$1,982	$3,376	$1,054	$971	$6,256	$1,813	$3,514
$16 012	$2,069	$17,349	$8,186	. . . . .	$16,996	$13,610	$18,336	$33,450
. . . . .	3,600	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	. . . . .	417	200	67	43	40	. . . . .
$592	$1,285	$4,583	$3,075	$1,093	$909	$81	$2,293	$1,185
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	$5,300	$20,029	$10,640
$13,514	$28,930	$13,085	$11,280	$6,775	$19,753	$17,722	$4,725	$2,692
$166,289	$116,126	$121,021	$41,185	$9,409	$4,937	$9,791	$146	$951

STRIKES AND LOCKOUTS.

A list of the strikes and lockouts that occurred in the state during the year 1891, are herewith presented. The strikes greatly outnumber those of any other year for several years, but the larger number were confined to the bituminous coal miners, coke workers and the iron and steel industries. On January 1, the miners along the Ohio river and its tributaries, struck for an advance per bushel for mining coal, believing that they were entitled to the advance from the fact that, owing to the failure of the supply of natural gas which was largely used in iron works and glass manufactories, the demand for coal would be materially increased. The men were successful in securing an increase of one-half cent per bushel, and the strike ended about the 9th of March. The next large strike was that of the coke workers, a detailed account of which is herewith presented. While the operators of the iron and steel works in the western part of the state have usually had pleasant relations with the Amalgamated Society of Iron and Steel Workers, and have generally been able to agree on a rate of wages with the committees of that society, (which rate remains in force for a year), and did so in 1891, the proprietors of the mills and furnaces in the central and eastern parts of the state, positively refused to recognize that society in fixing the rate of wages for the year commencing July 10, and the result was, that the workmen, or rather such of them as were members of that society, went out on a strike, and in some of the works were not re-employed. In very few of these establishments was it found necessary to shut down entirely, but work was continued with the men who refused to go out, and others were employed from time to time as needed. This strike was rather a disastrous one to those engaged in it, as in some cases men who had worked for some of the companies for years, and had been able to secure homes for themselves, bought with their savings, were obliged to break them up and seek employment elsewhere.

A very serious strike of the workmen in the building trades took place in Pittsburgh on May 10, for shorter hours of labor and an increase of wages; this strike lasted until July 9, and ended by the men resuming work upon the same basis of working hours and rate of wages as when

they went out. The bricklayers however refused to resume work at the old rates, or rather those of them who belonged to the bricklayers' union refused, and that strike still remained unsettled at the end of the year, as also did the strike of the bricklayers at Williamsport.

The coal miners in another section of the bituminous coal region went out on October 1, for an increase of wages, and after remaining idle for periods varying from thirty to forty-five days, resumed work at the old rate of wages.

The job printers and pressmen who belonged to the printers' union, and who were employed in the job offices in Pittsburgh, struck on October 1, for a working day of nine hours, and an increase of wages, but the employers would not accede to their demands, and up to the close of the year that strike also remained unsettled.

We also print herewith a table of the number of strikes and the causes and results of the same.

The estimated losses in wages to the workmen of the state amounts to the sum of $7,076,263.50 of which $4,000,000 was lost in the coke strike alone.

The loss of all the employers is estimated at $1,266,309.41. Of course in many cases the employers placed no estimate on their losses.

The number of strikes for increase of wages was 99; of which 23 succeeded and 76 failed. Against reduction, 6; succeeded, 0; failed, 6; partly succeeded, 2.

Ordered by labor organizations, 128; not ordered, 22; cause unknown, 5.

The Coke Strike.

The most disastrous strike of the year was that of the coke workers in the Connellsville region.

The "Connellsville Region" is the name given a strip of country about forty miles long by three miles wide and which runs northeast and southwest across Westmoreland and a part of Fayette counties, and at the time the strike commenced, it contained about 16,000 coke ovens of which there were 9,885 in actual operation manufacturing coke for the use of the iron furnaces in all parts of the state. The wage agreement between the employers and employes ended on February 9, and for some time previous to this date there had been rumors in circulation in the region that the coke workers were about to demand a higher rate of wages, also that their working day should be reduced to eight hours, and it was also rumored that the operators were to insist on a reduction on the present rate of wages of ten per cent., which, if not submitted to by the workmen, a lockout was threatened. This was the condition of affairs on February 9, and no agreement having been arrived at on that day, the men threw down their tools and went out on a strike, and the coke ovens and the mines from which they were supplied with coal, were shut down. There were two firms, however, in the region who employed a large num-

ber of men, that of Reid Brothers at Dunbar, Fayette county, and Wm. J. Rainey, who was a non-union operator. The men who were employed by these firms professed to be satisfied with their wages and had no disposition to engage in the strike, but threats were freely made by the strikers that if they did not also go out, that force would be used to compel them to do so. The number of men who were actually engaged or involved in the strike at its commencement was 16,000, which included coke workers, miners and iron furnace hands, and for several days thereafter everything was quiet and peaceable in the region.

On February 13, a large meeting of the strikers was held at Vanderbilt, and as a result the workmen in the employ of W. J. Rainey, at the "Paull" and Fort Hill works, threw down their tools and joined the strikers. There were between six and seven hundred men employed at these plants, who, up to this time, had strenuously opposed the strike, but either through fear of violence or from the force of example, they joined the others, although the workmen at the other plants which were operated by the same firm refused to go out, but on the 16th, some of Rainey's men went back to work.

On the same day the "Mower" mine took fire and several lives were lost; the fire was by some of the employers attributed to the strikers but nothing was ever developed to prove that it was other than accidental.

Matters remained unchanged for some days, with the exception of an occasional assault being made by some of the strikers on the men who persisted in remaining at work, until February 23, when a large body of strikers consisting of Italians, Huns, Slavs, with some of the English-speaking races, at least 4,000 strong, invaded Dawson, Fayette county, they were armed with clubs and revolvers and their purpose was to force the men who were still at work at the plants of Rainey & Co., to quit their work and join them, while another crowd about 1,500 strong, mostly Huns and Germans, went to Fort Hill, to force out the employes of the same firm who were still at work at that place. They drove the men from their work. They also succeeded in getting some of the men to join them in holding a meeting, and as they did not make any further demonstration on the property of Rainey & Co. they were not interfered with by the force of special officers, deputy sheriffs and Pinkerton's detectives employed by that firm for the preservation of their property.

There had been no acts of violence performed by the strikers up to this time with the exception of assaulting men on their way to and from work, and in which no injury of a serious nature was done. The strikers continued to parade, and hold meetings at which there was considerable music and noise, but on the morning of February 24, the coke workers who had been employed by Livergood & Anderson, at Scottdale, Westmoreland county, went out and joined the ranks of the strikers, and they spent the day going about from place to place with music, trying to induce men who were at work to join them.

On the evening of the above day while a meeting of the strikers was being held near the "Paull" plant, some of the Huns noticed two workmen quietly returning to their homes after their day's work was done. There was a stream of water that intervened between the men and the strikers, and prevented them from reaching the two men but they threw clubs and stones and shot at them, though they were not injured. At the same time they made an attack on Mine-boss Louden and slightly injured him. Deputy Sheriff Porter then notified the strikers that they were on the Rainey company's property and ordered them off. They then made a rush for him and but for the interference of the cooler heads among them he would have been seriously injured if not killed. As soon as he could get away, he telegraphed Sheriff McCormick, of Fayette county, for a posse of deputies and before they came some of the drivers from the Paull works who had been sent for a lot of rifles were seen by the strikers returning with them and were assaulted and beaten and the arms taken from them. Mine-boss Louden who had before been set upon and beaten by the strikers, was, together with a man named McCracken, again assaulted by them and seriously injured on the same evening.

On February 27, the coke ovens of the Fairchance Furnace Company were started up and twenty men reported for work, and although they were hooted and jeered at in going to and from their work, no actual violence was attempted on them, and many more men would have resumed work only for fear of violence to themselves and families, as by this time they were in great need of the necessaries of life.

The time from the above period until March 3, was mostly taken up by conferences between the employers and the leaders of the strikers looking to an adjustment of the differences between them, but without success. On the above date, a sensation was created by the arrest of all the labor leaders. Mine-boss Louden who as we have before stated was attacked and severely beaten by the strikers, swore out warrants against a number of them, charging them with conspiracy, riot and assault and battery on him; they had a hearing before a justice of the peace and gave bail for a further hearing at Uniontown on March 13. Legal proceedings were also had against others of the strikers by the operators, and Mr. Rainey who was a large manufacturer of coke, secured an injunction from the United States Court against the leaders of the strike to prevent them from interfering with him in conducting his business. Matters went on in comparative quiet until March 13, when the accused men had a hearing and were held in six hundred dollars bail each for trial at the June term of court at Uniontown. The strikers continued to hold daily meetings until March 27, and by this time there was great suffering among them, as the resources of the least provident, and of those who had large families to maintain, were exhausted and hunger and cold were rapidly causing distress and sickness in their families. At this time a number of the operators had started up their plants and

resumed the manufacture of coke, as a great many of the men had become convinced that the strike was a failure, and were anxious to begin work again. Other operators proposed to the men that they should resume work on a sliding scale of wages based upon the selling price of coke which offer was refused by their leaders; in the meantime, however the turbulent ones among the strikers were giving the men who had gone to work a great deal of trouble by raiding them at their work and attacking and beating them on their way to and from it.

On March 29, a detective, who had concealed himself in a house adjoining one occupied by a Hungarian leader, overheard a plot being formulated by some Hungarian strikers to raid the Morewood coke works owned and operated by the H. C. Frick Coke Company, and to murder Robert Ramsay, one of the Frick company's superintendents, and to burn his residence which was situated only one hundred yards from the mine shaft. Ramsay, on being notified of the plot, immediately removed his family to a place of safety. On the morning of the 30th of March, shortly after midnight, fully twelve hundred men made an attack upon the Morewood works; that the attack was the result of a pre-arranged plan, is proven by the fact that it was made by four divisions or separate bodies of the strikers, each headed by a band of music and starting from Alice, Standard, Bridgeport and Bessemer respectively, which were mining villages near Morewood. These works, which were the objective point, lie in a valley and the men advanced and completely surrounded them and by their shouts and imprecations struck terror to the watching body of deputy sheriffs, for they realized that their small force of twenty men, although heavily armed, would be able to make but a feeble resistance more particularly as their small force was scattered along the works for the space of at least half a mile and it would be impossible for them to act in concert. The strikers immediately commenced to destroy the company's property. The coke-oven doors were battered down for the purpose of destroying the coke which was in process of manufacture, tools were thrown into the ovens and destroyed, wheelbarrows piled up and burned and the railroad was rendered useless by numbers of the men seizing the ties and overturning the tracks, iron wheelbarrows were filled with the burning coke by the strikers for the purpose of firing the mine shaft and store houses, but they were saved from the general destruction by the counsel of the more moderate of the strikers; brick bats and rocks were thrown at the buildings however, and the doors and windows smashed, and it was feared by the guards that they would ransack the buildings but they were successfully held in check. After searching for the deputies thoroughly through the buildings they retired, leaving the goods unmolested. At about 4:30 a. m., they quietly dispersed, and from the concert of action between them it would seem as if they had been thoroughly drilled.

On the afternoon of the same day the sheriff of Westmoreland county

telegraphed the Governor of the state at Harrisburg for troops to be sent to the scene, but he received a reply to the effect that all the resources of the civil power must first be exhausted before the military power could be invoked. Later in the day in reply to a more urgent demand for assistance, he received answer from the Governor "I decline to issue an order for the use of arms."

The sheriff then accepted the proffered assistance of a number of the members of Company E, Tenth Regiment, National Guard of Pennsylvania who were sworn in as deputy sheriffs by Sheriff Dawson, making the armed force on duty at the Morewood works, on the night of the 31st of March, about fifty men.

By this time the residents of Mt. Pleasant and vicinity were in a state of great alarm, for from the fact of the strikers holding secret meetings and making threats, they feared that the worst was to come. The Hungarian women were in some cases worse than the men, for, on March 30, a party of them made an attack on the coke works at Leith, Fayette county, and drove the men who were at work from the ovens and a number of whom were seriously injured by blows from axes and tools which the women carried.

Numbers of the strikers had by this time realized that they had made a mistake and were ready and willing to resume work but they were prevented, as their lives were threatened by those who were determined to stay out until, as they expected, the employers would give in and their claims be conceded; and those who had the means to do so removed their families from the coke regions for the purpose of seeking employment elsewhere. On April 1, several labor leaders were arrested and held to bail for riot, assault and battery, and intimidation, etc., they all furnished bail for their appearance on April 15, and were released; at the same time an injunction was served upon them forbidding them to trespass on the Frick company's property or interfere with their workmen.

The strikers, on this night, March 31, burned Captain Loar in effigy at Mt. Pleasant. This town is the headquarters of company E, Tenth regiment, a number of whose members had been sworn in as deputy sheriffs as before stated, and Captain Loar, a dentist of the town, was the captain of the company, and also one of the deputy sheriffs. About 8:30 p. m. on the night of March 31, the distant sound of music was heard near Stonerville, a village about two miles from Mt. Pleasant, and a telephone message from that place warned the anxious watchers at Morewood that a body of three hundred strikers had passed that town evidently bound for the coke works, and as signal lights were seen flashing from various points of the surrounding country, it was feared by the guards that some movement of a serious nature was contemplated by the strikers.

Meanwhile scouts on horseback had been sent out from Mt. Pleasant to Morewood to warn the guards and deputy sheriffs to be on the alert for the reception of the strikers in case they meant mischief. The guards had strict orders given them not to fire unless attacked, or the strikers trespassed on the company's property and failed to halt when ordered. At ten o'clock the sound of the drums became louder and a body of strikers about one hundred and fifty strong from Donnelly and Stonerville, mining towns in the vicinity, approached the Morewood works. Here a surprise awaited them in the shape of Deputy Sheriff McConnell and Captain Loar at the head of fifty men armed with rifles, whereupon they slackened their pace and passed the armed men in silence. At 12:15 o'clock the next morning they (the strikers) were marching through Mt. Pleasant and drumming up recruits. As the morning wore on their numbers increased and soon there were nearly or quite a thousand men and boys in line, a great many of whom afterwards declared that they were forced from their beds and compelled to join the ranks. From this time it appears as if the cooler-headed leaders among them had lost control, and mutterings were heard in their ranks that Morewood should be attacked. Long and ardently the better-minded ones protested against such a course, but their pleadings were of no avail and the cry arose "To Morewood! to Morewood!" and at 2:30 o'clock the mob was on its way to that point where, at that time, one hundred and twenty-five deputy sheriffs and guards were silently watching.

The strikers advanced in two divisions, the first numbering about five hundred men and headed by two drum corps. The second squad or division kept several hundred yards in the rear of the first, and was preceded by a brass band. The distance from Mt. Pleasant to the Morewood works is about a mile and it was not many minutes until the hot-headed strikers composing the first division appeared in sight of the works. The guards were fully sensible of the fact that they had work before them, and their leaders hurriedly gave them their final orders.

The five hundred men composing the first division of the strikers marched past the advance guard at the works without making any demonstration, but at the fence, just beyond the company's office, they halted, but only for a moment, then, apparently by a preconcerted plan, they moved on again beyond the yards, seemingly not intending to commit any act of violence. When about half of the first body had gotten clear of the yards, they halted and turned back, approached the fence leading to the stables in a very threatening and noisy manner while above the racket could be heard the voice of Captain Loar commanding the mob to disperse, he even giving the order in the Hungarian language as he knew that the majority of those composing the mob was of that nationality.

At this point the stories of the guards and strikers differ, the deputies claim that there was firing from the ranks of the rioters from the time

they came in sight, and that fully three hundred shots had been fired before they aligned themselves outside the fence, and that when some of them commenced to climb the fence, the order rang out to "Fire," and in an instant a volley of rifle shots were fired into the compact mass of the strikers. Several volleys were fired in quick succession whereupon the now frenzied mob fled through the fields toward Mt. Pleasant. A few of them, however, turned and fired a parting volley at the deputies which did no harm.

When the mob had left, the deputies, now reinforced by others from other parts of the works who, on hearing the firing, had rushed to the scene of the fray, gathered up the bodies of the dead and badly wounded men and conveyed them to the stables.

Soon after the skirmish, the second squad of the strikers which had as yet taken no part in the fray, appeared on the scene and made a demand for the bodies of their dead comrades. They were refused and, fearing a repetition of the affair, they withdrew, making threats to kill the deputies.

The story of the rioters and their friends was that they had no intention of making an attack upon the company's works and that the firing on them by the deputies was unwarranted. On the part of the guards Captain Loar claimed that he had not given the order to fire and every member of the force of guards was willing to be sworn that he (the captain) had not given the order, but by whom it was given has never been ascertained, and the rest of the day passed without any further trouble.

The sun rose on a troubled community at Mt. Pleasant on the morning of the riot, but few had slept during the night and the quiet citizens assembled at the street corners and with anxiety discussed the terrible affair of the early morning. Business was practically at a standstill and the most exaggerated rumors were flying about, and grave fears were expressed that the killing of the strikers was only the forerunner of further and more serious trouble. It was at first reported, and generally believed, that at least forty men had been killed, and that the strikers would exact a terrible revenge for the killing of their friends was generally conceded, unless prompt measures were taken by the state authorities, and the rumor that prevailed later in the day that the state troops had been ordered out, did not tend to decrease the feeling of anxiety among the people. All the morning the arriving trains brought numbers of the friends of the strikers from all parts of the coke region and by noon the streets of Mt. Pleasant were crowded with coke workers who surged about from one place to another, seemingly unmindful of the cold drizzling rain that had commenced to fall. They seemed to grow more restless as the day wore on, and their manner, seemed to indicate that there was further trouble ahead; but the day ended quietly, and the only steps taken were for the labor leaders to enter suit before

a magistrate against Captain Loar and a number of the deputies. Company E of the Tenth regiment, commanded by Captain Loar, was ordered to assemble in its armory at Mt. Pleasant at noon, the members to hold themselves in readiness for any call that might be made upon them. An inquest was held on the bodies of the seven men who were killed by the deputies, the taking of testimony was continued all day and was resumed the next morning.

At seven o'clock on the morning of the second of April, the Governor at Harrisburg, received a dispatch from the sheriff of Westmoreland county, communicating to him an account of the riot at Morewood, and the killing of the strikers, whereupon the Governor ordered the Tenth regiment, National Guard of Pennsylvania, commanded by Colonel Alex. L. Hawkins, to move promptly to the support of the sheriff, and he also ordered Colonel Norman M. Smith of the Eighteenth regiment, at Pittsburgh, to assemble his regiment under arms and await further orders. Later in the day Colonel Smith also received orders to move to the support of the authorities of Westmoreland county, and by the morning of April 3, the troops had arrived at Mt. Pleasant, and the quiet citizens of that place and the surrounding country had some assurance that peace would be preserved and further rioting prevented.

There was fear of trouble at the funerals of the victims of the riot which were to take place on the afternoon of the 4th of April, as nearly ten thousand men had gathered at Mt. Pleasant for the purpose of following the remains to their graves. As a measure of precaution five companies of the Eighteenth regiment were ordered out, but everything passed off quietly and after the funeral was over a labor meeting was held at which the speakers counseled the men to refrain from all acts of violence and to respect the laws.

Work was commenced at some of the plants on Monday, April 6, and the men who returned to work were not molested, and there was no excitement whatever about the works. For several days after the riot warrants of arrest were issued by both the strikers and the operators; the strikers for the deputies who were on guard at the Morewood works on the fatal night, and by the operators for the arrest of those who had taken part in the attack, even the members of the brass band that had headed the strikers being arrested and held for trial. Meanwhile hundreds of Hungarians and other foreigners who had taken part in the strike, were leaving the coke region with their families for the purpose of seeking employment in other localities, while the coke companies were at the same time serving notices of eviction upon those of the strikers who lived in the company houses and who were accused of having fired from their houses upon the deputy sheriffs. On April 9, for the first time such of the strikers as were without means had rations issued to them by the society of the United Mine Workers of America.

On April 12, the Eighteenth regiment was relieved from duty and ordered home to Pittsburgh.

The next day there was more coke made than had been on any one day since the strike commenced as a largely increased number of the strikers has resumed work. Now, for the first time, was the real pinch felt, for it was clearly demonstrated that some of the strikers and their families were suffering for the actual necessities of life, and numbers of them would gladly have returned to work but they were intimidated by threats that if they did their houses would be burned, and it was found absolutely necessary to guard the houses of such of the men who, in defiance of the threats of those who wished to continue the strike, resumed their work; so guards were placed about their houses at night, but in spite of these precautions there were demonstrations made at the Trotter mines upon the houses of the men who were at work by an angry crowd, composed equally of men and women and in which the doors and windows of the houses were broken and shattered and a number of the inmates seriously injured by the flying missiles but there were no fatalities.

Much alarm was created at this time among the law-abiding residents of the region by a rumor that the other regiment of troops was to be relieved, and the fear was intensified when, on the 16th of April, an order was received by the colonel of the regiment on duty, from the Governor, commanding him to leave the next morning with his regiment; the operators upon learning of this, called upon Colonel Hawkins and entered a protest against the troops being relieved, as they believed that as soon as the soldiers left the rioting would break out again; for, notwithstanding the efforts of the labor leaders to keep the strikers peaceable, the foreign element among them still thirsted for revenge for their countrymen who were killed at Morewood.

The opinion of the operators seemed to be that the withdrawal of the troops would tend to prolong the strike, as the men were gradually returning to work, and scores of them were ready and willing to resume could they feel sure that they would be protected; meanwhile the evictions were steadily going on, which led to considerable rioting, owing to the strong resistance made by the Huns and Poles who were forced to leave the companies' houses, however, the troops left on the 17th, whereupon a large number of men who had been at work at Morewood immediately quit work, as they felt that they would not be permitted to work after the troops were withdrawn. As a measure of precaution company E of the Tenth regiment, whose headquarters were at Mt. Pleasant, was ordered to remain on duty in the armory, ready to be called upon at any time.

Upon the same day, the inquest upon the men who were killed, was concluded and the jury agreed to render its verdict on the following Monday morning.

The effects of removing the troops were speedily seen, as rioting was resumed at Leisenring, Kyle and Leith villages in Fayette county, and the sheriff of that county, being unable to cope with the rioters with the means at his command, telegraphed the Governor for aid, who replied, as follows: "Send information in detail of the rioting; it is not the duty of the state troops to act as police officers, their duty is to maintain the peace and uphold the law. The civil authority must be entirely exhausted before the military can intervene." Whereupon Sheriff McCormick replied, as follows: "On Thursday I attempted to execute a writ of eviction at the Trotter works, assisted by a number of deputies, and as large a posse as I was able to command, but a crowd of about three hundred gathered at once and prevented me from executing the writ and drove myself and posse from the premises. The water-tank at the Kyle works was blown up this morning. At Leith to-day a striker who was arrested, was rescued from the deputies by a crowd of about two hundred and fifty strikers. At Leisenring, to-day, my deputies were driven off by a mob, and the men who were at work were driven off by the strikers, and, owing to the dangerous and turbulent character of the rioters, I am unable to secure a posse adequate to the exigencies of the moment and I consider the power of the county as exhausted."

Upon the receipt of the above dispatch, the Governor directed Adjutant General Wm. McClelland to telegraph to the captain of company C, Tenth regiment, whose headquarters were at Uniontown, Fayette county, the nearest company to the scene, to immediately put his command under arms and report with it to the sheriff, which was promptly done.

At the close of the week ending April 18, there were 3,600 coke ovens in operation in the district, and it was estimated that there were 2,500 men at work, but the strikers who wished to hold out were trying by every means in their power to intimidate the men who were willing to work and to keep them from working; to illustrate, on the night of April 17, a number of dynamite bombs were exploded in close proximity to the Scottdale works, and of the houses of the employes who were at work, and as rumors were rife amongst the strikers that a large number of foreign workmen, principally Italian, were to be brought into the region to take the places of the strikers, it was greatly feared that such a course on the part of the operators would tend to increase the trouble; consequently there was great anxiety all through the region, so that word was sent to Harrisburg, and Adjutant General Wm. McClelland came to ascertain the condition of affairs.

The coroner's jury that was empanelled to investigate the matter of the killing of the strikers, rendered their verdict on Monday, the 20th, to the effect that the men met their death at the hands of the deputies, but made no return as to whether the shooting was justifiable or not.

About this time the sheriff of Fayette county attempted, single-handed, to evict some Hungarian strikers at Leith, when he was set upon by an

excited crowd of men and women and severely injured, whereupon the soldiers were ordered to the scene and their presence soon quieted matters and the evictions went on without further disturbance. To further complicate or rather aggravate matters, the notorious socialist Herr Most made his appearance in the region, and proposed to address the socialistic element among the strikers, but the leaders quickly realized that to permit this would be but to add fuel to the fire, and they refused him permission to address any of their meetings.

The principal trouble about this time was caused by the strikers' wives resisting the deputy sheriffs, who were engaged in turning them out of the companies' houses. These women, mostly Huns and Poles, fought savagely against the evictions, and the deputies received very rough handling and in some cases were severely injured in the discharge of their disagreeable duty.

This state of things continued from day to day, and on the 22d, Sheriff McCormick, of Fayette county, in attempting to evict some tenants at the Adelaide works, was fiercely attacked by a mob of Slavish men and women and in the melee shots were fired by the rioters and the sheriff himself was slightly wounded. The soldiers who were stationed a short distance away, were ordered to the scene but the presence of the soldiers only restrained the crowd for a few minutes, when another attack was made on the sheriff and his deputies, whereupon the soldiers with fixed bayonets charged the mob driving it through the streets of the village, and some of the men plunged into the Youghiogheny river, at this place about two hundred yards wide, and swam to the other bank. The trouble was the next day renewed at Leisenring where other evictions were in progress, and here a woman, a Hungarian, shot and slightly wounded the sheriff who thereupon returned the fire and slightly wounded the woman and two men. The evictions went steadily on and there was necessarily much suffering among the strikers and their families at this time as many of them were without shelter and adequate food.

The end of April saw the strike still on, but the operators reported a steady increase in their working forces; violent and incendiary circulars were being distributed through the region by the socialistic element of the strikers, but in spite of this there was a general feeling that the worst was over as numbers of strangers, mostly Italians, were coming into the region and taking the places of the strikers who still refused to work, and the presence of the two companies of soldiers who still remained on duty, prevented them from being attacked by the strikers who now realized that their chances of success were steadily decreasing, and on May 21, the men, in defiance of the orders of their leaders, returned to work in large numbers and, on May 24 the great strike had entirely collapsed, and such of the men as had not by their prominence made themselves objectionable to their employers were permitted to return to work.

It is estimated that there were two thousand evictions in the region

during the strike and that there was at least $4,000,000 lost in wages during that time, and an expense to the state of $35,000 for the pay and subsistence of the troops.

The operators themselves are not blameless in this matter. Desire for cheap labor seems to have influenced them in employing men utterly unacquainted with our laws or customs, unfitted in many respects to be associates of the better class of citizens, and who, in time, acquired a knowledge that led them to be breeders of discontent and trouble. Excited and infuriated, unable to reason or be reasoned with, the only course seemingly left to them was the destruction of property. This affair clearly shows that there are considerations besides cheapness of labor in employing men—the peace of society, the safety of human life and property, which cannot be safely overlooked.

Captain Loar and the deputy sheriffs who had been indicted for shooting the rioters at Morewood, were tried at the May term of the Westmoreland county courts and acquitted. Some fifteen of the rioters were tried at the same term of court and convicted, two of them were sentenced to the county jail, two to the workhouse and in the cases of the other eleven, sentence was suspended. The deputy sheriffs were tried at the September term of court and were acquitted, four cases against the rioters were tried at the same time and two of them were convicted and sentenced to the workhouse, one for two years and the other for one, and thus ended the strike in the Connellsville coke region.

STRIKES AND

INDUSTRIES.	LOCALITY.	CAUSE OR OBJECT.
Wire works,	Braddock,	To compel recognition of Amalgamated Iron and Steel Society.
Coal mining,	Camden,	For increase of wages,
Coal mining,	Jefferson township,	For increase of wages,
Coal mining,	Dravosburg,	For increase of wages,
Coal mining,	McKeesport,	For increase of wages,
Coal mining,	Milesville,	For increase of wages.
Coal mining,	Fayette county,	For increase of wages,
Coal mining,	Allegheny county,	For increase of wages,
Coal mining,	Fayette county,	For increase of wages,
Coal mining,	Hilldale,	For increase of wages,
Coal mining,	Camden,	For increase of wages,
Coal mining,	Coal Centre,	For increase of wages,
Coal mining,	West Brownsville,	For increase of wages,
Coal mining,	Allegheny county,	For increase of wages,
Coal mining,	Monongahela City,	For increase of wages,
Coal mining,	Elizabetn,	For increase of wages,
Coal mining,	Brownsville,	For increase of wages,
Coal mining,	Allen township,	For increase of wages,
Coal miuing,	Roscoe,	For increase of wages,
Coal mining,	Elizabeth,	For increase of wages,
Coal mining,	Monongahela City,	For increase of wages,
Coal mining,	Monongahela City,	For increase of wages,
Coal mining,	California,	For increase of wages,
Rolling mill,	Birdsboro',	Against a reduction of wages,
Brieklayers,	Williamsport,	For increase of wages,
Iron works,	Pottstown,	Against a reduction of wages,
*Coke workers,	Fayette and Westmoreland counties.	For shorter hours and increase of wagss,
Rolling mill,	Norristown,	Change in machinery,
Steel castings,	Thurlow,	Workmen refnsed to work with non-union men.
Hosiery mill,	Bristol,	For increase of wages,
Cork manufactory,	Pittsburgh,	Against interference of a labor organization.
Textile goods manufactory,	Philadelphia,	Against the imposition of fines,
Rolling mills,	Reading,	Refusal of firm to sign scale of wages of Amalgamated Iron and Steel Association.

* A detailed history of this strike is given elsewhere.

LOCKOUTS.

Ordered by labor organization.	ESTABLISHMENTS. Number.	ESTABLISHMENTS. Days closed.	Number of persons engaged in strike.	Number of persons involved in strike.	Beginning.	End.	Duration—days.	Succeeded.	Loss.	Employers' loss.
Yes,	1	30	100	100	Dec 15, 1890,	Apr. 1, 1891,	105	No,	$40,000 00	$30,000 00
*	1	58	45	56	Jan. 1, 1891,	Mar. 9, 1891,	67	Yes,	7,500 00	†
Yes,	1	68	450	520	Jan. 1, 1891,	Mar. 9, 1891,	68	Yes,	143,000 00	34,000 00
Yes,	1	67	175	25	Jan. 1, 1891,	Mar. 9, 1891,	67	Yes,	31,320 00	†
No.	1	60	150	150	Jan. 1, 1891,	Mar. 1, 1891,	60	Yes,	†	†
Yes,	1	68	100	150	Jan. 1, 1891,	Mar. 9, 1891,	67	Yes,	25.000 00	†
Yes,	1	58	110	128	Jan. 1, 1891,	Mar. 9, 1891,	67	Yes.	9,986 45	†
Yes,	1	57	180	180	Jan. 1, 1891,	Mar. 7, 1891,	57	Yes.	28,000 00	†
Yes,	1	None,	24	24	Jan. 1, 1891,	Mar. 6, 1891,	56	Yes,	†	†
Yes,	1	69	115	225	Jan. 1, 1891,	Mar. 10, 1891,	69	Yes,	56,250 00	1,725 00
Yes,	1	57	175	175	Jan. 1, 1891,	Mar. 7, 1891,	57	Yes,	43,750 00	†
Yes,	1	68	130	148	Jan. 1, 1891,	Mar. 9, 1891,	68	Yes,	14.000 00	1,600 00
Yes,	1	61	125	150	Jan. 1, 1891.	Mar. 6, 1891,	61	Yes.	13.500 00	†
Yes,	1	16	115	120	Jan. 1, 1891,	Jan. 17, 1891.	16	Yes,	4.500 00	500 00
Yes.	. . .	67	45	130	Jan. 1, 1891,	Mar. 7, 1891,	67	Yes,	1,000,000 00	1.000.000 00
Yes,	1	56	75	168	Jan. 1. 1891,	Mar. 6, 1891,	66	Yes,	11.000 00	700 00
Yes,	1	60	90	100	Jan. 1, 1891.	Mar. 1, 1891,	60	Yes,	10,000 00	†
Yes,	1	60	60	72	Jan. 1, 1891,	Mar. 9, 1891,	60	Yes.	4.500 00	†
Yes.	1	68	112	122	Jan. 1. 1891.	Mar. 9, 1891,	68	Yes,	17,731 68	4,800 00
Yes,	1	14	94	109	Jan. 1, 1891,	Feb. 28. 1891,	59	Yes,	22,694 00	2,550 00
Yes,	1	60	45	130	Jan. 1, 1891,	Mar. 1, 1891,	60	Yes,	. . . . .	. . . . .
Yes,	1	67	45	85	Jan. 1. 1891.	Mar. 7, 1891,	45	Yes,	15.000 00	†
Yes,	1	66	70	80	Jan. 2, 1891,	Mar. 8, 1891,	66	Yes,	11,600 00	1,500 00
No,	1	22	409	469	Feb. 1, 1891.	Feb. 23, 1891,	22	No,	12,000 00	1,000 00
Yes,	1	. . . .	. . . .	. . . .	. . . . .	‡	. . .	. . .	. . . . .	. . . . .
Yes,	1	17	600	752	Feb. 1, 1891.	Feb. 19, 1891,	18	No,	14,000 00	†
. . .	. . .	. . . .	. . . .	. . . .	. . . . .	. . . . .	. . .	. . .	. . . . .	. . . . .
No,	1	1	90	260	Feb. 23, 1891,	Feb. 24, 1891,	1	No.	300 00	250 00
Yes,	1	. . . .	300	380	Mar. 5, 1891,	June 10, 1891.	96	No,	25,000 00	10,000 00
No,	1	. . . .	20	20	Mar. 12. 1891,	Mar. 14, 1891,	. . .	§	50 00	50 00
Yes,	1	2½	950	1,875	Mar. 18, 1891,	Mar. 24, 1891,	2½	No,	2,500 00	†
No,	1	. . . .	136	205	Mar. 20, 1891.	Mar. 30, 1891,	10	No,	1.730 00	†
Yes,	1	120	250	250	Apr. 5. 1891.	Aug. 5, 1891,	120	No,	45,000 00	†

* Not known. † Not estimated. ‡ Strike still on. § Partly.

INDUSTRIES.	LOCALITY.	CAUSE OR OBJECT.
Iron works,	Seyfert Station,	Refusal of firm to sign scale of wages of Amalgamated Iron and Steel Association.
Cork manufactory,	Lancaster,	Change in method of working.
Rolling mill,	Pencoyd,	Firm refused to recognize trade union,
Stone masons,	Pittsburgh,	Shorter hours and increase of wages,
Planing mill,	Erie,	For a nine-hour working day,
Planing mill,	Erie,	Firm refused to recognize trade union,
Plumbers,	Pittsburgh,	Shorter hours and increase of wages,
Tinners,	Pittsburgh,	Shorter hours and increase of wages,
Structural iron workers,	Pittsburgh,	Shorter hours and increase of wages,
Tile layers,	Pittsburgh,	Shorter hours and increase of wages,
Slate roofers,	Pittsburgh,	Shorter hours and increase of wages,
*Stone cutters,	Pittsburgh,	Shorter hours and increase of wages,
* Plasterers,	Pittsburgh,	Shorter hours and increase of wages,
Bricklayers,	Pittsburgh,	Shorter hours and increase of wages,
House painters,	Pittsburgh,	Shorter hours and increase of wages,
Hod carriers,	Pittsburgh,	Shorter hours and increase of wages,
Carpenters,	Pittsburgh,	Shorter hours and increase of wages,
Electricians,	Pittsburgh,	Shorter hours and increase of wages,
Planing mill,	Erie,	Shorter hours and increase of wages,
Rug weavers,	Philadelphia,	For increase of wages,
Planing mill,	Erie,	Shorter hours and increase of wages,
Stove manufacturer,	Linfield,	Refused to agree to equalization of wages,
Iron works,	Birdsboro',	For increase of wages,
Silk plush manufactory,	Philadelphia,	Against introduction of new industry,
Textile goods manufactory,	Philadelphia,	Refusal of firm to discharge an inspector
Nailmakers,	Birdsboro',	Against a reduction of wages,
Rolling mill,	Norristown,	Refusal of firm to sign scale of Amalgamated Iron and Steel Association.
Rolling mill,	Catasauqua,	Refusal of firm to sign scale of Amalgamated Iron and Steel Association.
Rolling mill,	Harrisburg,	Refusal of firm to sign scale of Amalgamated Iron and Steel Association.
Rolling mill,	Pottsville,	Firm refused to recognize the Amalgamated Iron and Steel Association.
Rolling mill,	Scranton,	Refusal of firm to sign scale of Amalgamated Iron and Steel Association.
Iron and steel works (lockout),	Steelton,	Firm would not agree to employes' terms,
Coal mining,	Luzerne county,	For semi-monthly payments,
Yarn manufacturers,	Bridgeport,	For increase of wages,

*Could not work on account of building trades strike.

Ordered by labor organization.	ESTABLISHMENTS. Number	ESTABLISHMENTS. Days closed.	Number of persons engaged in strike.	Number of persons involved strike.	Beginning.	End.	Duration—days.	Succeeded.	Loss.	Employers' loss.
Yes,	1	120	*	*	Apr. 5, 1891,	Aug. 3, 1891,	118	No,	$40,000 00	†
*	1	. . . .	20	20	Apr. 6, 1891,	Still on, . . .	. . .	No,	. . . . .	. . . . .
Yes,	1	4	377	730	Apr. 8, 1891,	Still on, . . .	. . .	No.	†	†
Yes,	‡	60	800	800	Apr. 20, 1891,	July 9, 1891,	70	No.	201,600 00	$102,000 00
Yes,	1	. . . .	25	25	May 1, 1891,	June 6, 1891,	36	No.	1,500 00	†
Yes,	1	. . . .	33	33	May 1, 1891,	Still on, . . .	. . .	No.	1,320 00	†
Yes,	‡	60	500	500	May 1, 1891,	July 9, 1891,	69	No,	82,500 00	60,000 00
Yes,	‡	60	275	275	May 1, 1891,	July 9, 1891,	69	No,	44,375 00	33,000 00
Yes,	‡	60	60	75	May 1, 1891,	July 9, 1891,	69	No,	12,375 00	9,000 00
Yes,	‡	60	30	30	May 1, 1891,	July 19, 1891,	79	No,	6,750 00	3,600 00
Yes,	‡	60	50	50	May 1, 1891,	July 9, 1891,	69	No,	9,000 00	6,000 00
No,	. . .	60	600	600	May 1, 1891,	July 9, 1891,	69	. . .	142,560 00	72,000 00
No,	. . .	60	375	375	May 1, 1891,	July 9, 1891,	69	. . .	78,700 00	45,000 00
Yes,	‡	§	. . . .	. . . .	. . . . .	. . . . .	. . .	. . .	. . . . .	. . . . .
Yes,	‡	60	850	850	May 1, 1891,	July 9, 1891,	69	No,	153,000 00	68,250 00
Yes,	‡	60	1,000	1,000	May 1, 1891,	July 9, 1891,	69	No,	150,000 00	60,000 00
Yes,	‡	60	3,650	4,625	May 1, 1891,	July 9, 1891,	69	No,	702,250 00	538,000 00
Yes,	‡	60	75	75	May 1, 1891,	July 9, 1891,	69	No,	13,500 00	9 000 00
Yes,	1	. . . .	75	75	May 1, 1891,	May 11, 1891.	10	No,	1,200 00	†
No,	1	49	308	894	May 1, 1891,	June 19, 1891,	49	No,	51,000 00	20,000 00
Yes,	1	. . . .	9	9	May 1, 1891,	June 3, 1891,	34	No,	532 50	2,000 00
*	1	16	52	104	May 7, 1891,	May 25, 1891,	13	No,	3,000 09	None.
No,	1	20	6	456	May 11, 1891,	June 1, 1891.	20	‖	12,000 00	†
*	1	70	400	1,400	May 18, 1891,	July 29, 1891,	70	No,	115,000 00	†
No,	1	2	200	600	May 25, 1891,	May 16, 1891.	2	No,	900 00	$700 00
No,	1	17	40	215	June 1, 1891,	June 17, 1891,	17	No,	4,500 00	None.
Yes,	1	3	53	248	July 1, 1891,	Aug. 3, 1891,	3	No,	1,500 00	†
Yes,	1	21	800	800	July 1, 1891,	Still on, . . .	21	No,	24,000 00	†
Yes,	1	26	40	60	July 1, 1891	July 27, 1891.	26	No,	†	
Yes,	1	35	100	400	July 1, 1891,	Aug. 11, 1891.	35	No.	30,000 00	†
Yes,	1	8	15	68	July 6, 1891,	July 15, 1891,	8	No.	†	1,000 00
*	1	. . . .	40	40	July 18, 1891,	July 23, 1891.	5	No,	400 00	100 00
Yes,	1	7	3,000	6,500	July 21, 1891.	July 30, 1891.	7	No,	30,000 00	10,000 00
No.	1	. . . .	35	55	July 25, 1891,	July 26, 1891.	1	No.	†	†

* Not known. † Not estimated. ‡ General strike § Strike still on. ‖ Partly

INDUSTRIES.	LOCALITY.	CAUSE OR OBJECT.
Rolling mill,	Sharpsburg,	Against a reduction of wages,
Roofing slate manufactory,	Bangor,	For payment of arrears of wages,
Stove manufacturer,	Royer's Ford,	Against employment of a non-union man.
Iron ship builders,	Philadelphia,	For increase of wages,
Railroad building,	Allentown,	Against discharge of fellow-workmen,
Lumber manufacturer,	Sunbury,	Against a reduction of wages,
Job compositors and pressmen.	Pittsburgh,	For reduction of hours and increase of wages.
Iron furnace,	Huntingdon county,	Against a reduction of wages,
Coal mining,	Schuylkill county,	Men refused to guarantee mine supplies,
Coal mining,	Finleyville,	For increase of wages,
Coal mining,	Walker's Mills,	For increase of wages,
Coal mining,	Oakdale Station,	For increase of wages,
Coal mining,	Banksville,	For increase of wages,
Coal mining,	Federal,	For increase of wages,
Coal mining,	Bridgeville,	For increase of wages,
Coal mining,	Venetia,	For increase of wages,
Coal mining,	Banksville,	For increase of wages,
Coal mining,	Banksville,	For increase of wages,
Coal mining,	Allegheny county,	For increase of wages,
Coal mining,	Imperial,	For increase of wages,
Coal mining,	Allegheny county,	For increase of wages,
Coal mining,	Dravo Station,	For increase of wages,
Coal mining,	Noblestown,	For increase of wages,
Coal mining,	Woodville,	For increase of wages,
Coal mining,	Hastings Station,	For increase of wages,
Coal mining,	Osceola,	For increase of wages,
Coal mining,	Beadling,	For increase of wages,
Coal mining,	Allegheny county,	For increase of wages,
Coal mining,	Belle Vernon,	For increase of wages,
Coal mining,	Courtney,	For increase of wages,
Coal mining,	Stockdale,	For increase of wages,
Coal mining,	Stockdale,	For increase of wages,
Coal mining,	Buena Vista,	For increase of wages,
Coal mining,	Scott Haven,	For increase of wages,
Coal mining,	Scott Haven,	For increase of wages,
Coal mining,	Allegheny county,	For increase of wages,
Coal mining	Leasdale,	For increase of wages,

Ordered by labor organization.	ESTABLISHMENTS. Number.	ESTABLISHMENTS. Days closed.	Number of persons engaged in strike.	Number of persons involved in strike.	Beginning.	End.	Duration—days.	Succeeded.	Loss.	Employers' loss.
Yes,	1	....	250	500	Aug. 1, 1891,	Dec. 15, 1891,	135	No,	$60,000 00	$50,000 00
No,	1	....	62	62	Aug. 3, 1891,	Aug. 8, 1891,	5	Yes,	500 00	†
Yes.	1	....	50	100	Aug. 4, 1891,	Aug. 15, 1891,	11	No,	2,800 00	1,000 00
No,	1	....	318	318	Aug. 17, 1891,	Oct. 12, 1891,	73	No,	30,000 00	50,000 00
No,	1	....	40	40	Aug. 20, 1891,	Aug. 27, 1891.	7	No,	†	†
No,	1	2	13	12	Sept. 1, 1891,	Sept. 3, 1891,	2	No,	63 50	75 00
Yes,	1	*	....	....	.....	.....	...	...	.....	.....
No,	1	3	60	210	Sept. 16, 1891.	Sept. 19, 1891,	3	No,	787 50	†
No,	1	3	100	500	Sept. 17 1891,	Sept. 21, 1891,	...	No,	1,800 00	†
Yes,	1	34	65	65	Oct. 1, 1891,	Nov. 3. 1891,	34	No,	5,525 00	250 00
Yes,	1	35	90	100	Oct. 1, 1891,	Nov. 4, 1891,	35	No,	7,000 00	1,000 00
Yes,	1	31	100	110	Oct. 1, 1891,	Nov. 2, 1891,	32	No,	4,000 00	1,000 00
Yes,	1	36	155	355	Oct. 1. 1891,	Nov. 5, 1891,	36	No,	14.500 00	2,000 00
Yes,	1	40	160	170	Oct. 1, 1891,	Nov. 12, 1891,	43	No,	5.000 00	1.200 00
Yes,	1	35	90	111	Oct. 1, 1891,	Nov. 5, 1891,	35	No,	4,095 85	2,001 96
Yes,	1	33	125	245	Oct. 1, 1891,	Nov. 2, 1891,	33	No,	5,000 00	†
Yes,	1	35	300	350	Oct. 1, 1891,	Nov. 5, 1891,	35	No,	15,500 00	3,500 00
Yes,	1	33	200	200	Oct. 1, 1891,	Nov. 3, 1891,	33	No,	12,000 00	1,000 00
Yes,	1	32	160	180	Oct. 1, 1891,	Nov. 8, 1891,	38	No,	9,000 00	2,000 00
Yes,	1	33	135	160	Oct. 1, 1891,	Nov. 7, 1891,	37	No,	8,500 00	1,300 00
Yes,	1	32	140	170	Oct. 1, 1891,	Nov. 6, 1891,	36	No,	9.000 00	1,500 00
Yes,	1	35	60	69	Oct. 1, 1891,	Nov. 4, 1891,	35	No,	5,163 00	700 00
Yes,	1	30	75	75	Oct. 1, 1891,	Nov. 4, 1891,	34	No,	4,000 00	1,000 00
Yes,	1	33	165	165	Oct. 1, 1891.	Nov. 7, 1891	37	No,	10.000 00	2,500 00
Yes,	1	33	75	100	Oct. 1, 1891,	Nov. 8, 1891,	38	No,	5,500 00	1,500 00
Yes.	1	30	195	215	Oct. 1, 1891.	Nov. 3, 1891,	33	No,	6,000 00	3,000 00
Yes,	1	29	175	195	Oct. 1, 1891.	Nov. 3, 1891,	33	No,	9,000 00	5,400 00
Yes,	1	42	152	170	Oct. 1, 1891,	Nov. 11, 1891,	42	No,	8,000 00	1,000 00
Yes,	1	33	90	95	Oct. 1, 1891,	Nov. 3, 1891,	33	No,	6,000 00	1,000 00
Yes,	1	33	75	87	Oct. 1, 1891.	Nov. 8, 1891,	38	No,	6,400 00	500 00
Yes,	1	....	25	25	Oct. 1, 1891.	Oct. 31, 1891,	30	No,	2,000 00	†
Yes,	1	....	20	20	Oct 1, 1891,	Oct. 31, 1891,	30	No,	1,500 00	†
Yes.	1	30	100	100	Oct. 1, 1891,	Oct. 31. 1891,	30	No,	5,000 00	500 00
Yes,	1	30	200	200	Oct. 1, 1891,	Oct. 31, 1891,	30	No,	10,000 00	1,000 00
Yes,	1	30	900	900	Oct. 1, 1891.	Oct. 31. 1891,	30	No,	40,000 00	4,000 00
Yes,	1	31	125	150	Oct. 1, 1891,	Nov. 10, 1891.	40	No,	6,000 00	†
Yes,	1	36	102	110	Oct. 1, 1891,	Nov. 12, 1891,	32	No,	6,597 00	1,300 00

* Strike is still unsettled.

† Not estimated.

INDUSTRIES.	LOCALITY.	CAUSE OR OBJECT.
Coal mining,	Federal,	For increase of wages.
Coal mining,	Leasdale,	For increase of wages.
Coal mining,	Elizabeth,	For increase of wages,
Coal mining,	Coal Bluff,	For increase of wages,
Coal mining,	Allegheny county,	For increase of wages.
Coal mining,	Snowden Station,	For increase of wages,
Coal mining,	McDonald,	For increase of wages,
Coal mining,	Gastonville,	For increase of wages,
Coal mining,	McDonald,	For increase of wages,
Coal mining,	Monongahela City,	For increase of wages.
Coal mining,	Willow Grove,	For increase of wages,
Coal mining,	Monongahela City,	For increase of wages.
Coal mining,	Canonsburg,	For increase of wages,
Coal mining,	Mansfield,	For increase of wages.
Coal mining,	Hickman,	For increase of wages.
Coal mining,	Guffy Station,	For increase of wages.
Coal mining,	Bower Hill,	For increase of wages.
Coal mining,	Allegheny county,	For increase of wages.
Coal mining,	Courtney,	For increase of wages.
Coal mining,	Anderson Station,	For increase of wages.
Coal mining,	Mansfield,	For increase of wages,
Coal mining,	Robbiu's Station,	For increase of wages,
Job compositors and pressmen,	Pittsburgh,	For a working day of nine hours,
Job compositors and pressmen,	Pittsburgh,	For a working day of nine hours,
Job compositors and pressmen,	Pittsburgh,	For a working day of nine hours,
Job compositors and pressmen,	Pittsburgh,	For a working day of nine hours,
Job compositors and pressmen,	Pittsburgh,	For a working day of nine hours,
Job compositors and pressmen,	Pittsburgh,	For a working day of nine hours,
Job compositors and pressmen,	Pittsburgh,	For a working day of nine hours,
Job compositors and pressmen,	Pittsburgh,	For a working day of nine hours,
Job compositors and pressmen,	Pittsburgh,	For a working day of nine hours,
Job compositors and pressmen,	Pittsburgh,	For a working day of nine hours,
Job compositors and pressmen,	Pittsburgh,	For a working day of nine hours,
Job compositors and pressmen,	Pittsburgh,	For a working day of nine hours,
Job compositors and pressmen,	Pittsburgh,	For a working day of nine hours,
Job compositors and pressmen,	Pittsburgh,	For a working day of nine hours,

Ordered by labor organization.	Establishments.		Number of persons engaged in strike.	Number of persons involved in strike.	Beginning	End.	Duration—days.	Succeeded.	Loss.	Employers' loss.
	Number.	Days closed.								
Yes,	1	33	175	202	Oct. 1, 1891	Nov. 9, 1891,	30	No,	$9,200 00	$4,050 00
Yes,	1	40	60	68	Oct. 1, 1891	Nov. 11, 1891,	40	No,	5,000 00	1,500 00
Yes,	1	30	60	72	Oct. 1, 1891,	Nov. 4, 1891,	34	No,	5,400 00	1,300 00
Yes,	1	30	150	185	Oct. 1, 1891,	Nov. 3, 1891.	33	No,	7,500 00	1,500 00
Yes,	5	30	1,213	1,522	Oct. 1, 1891.	Nov. 1, 1891,	30	No,	90,000 00	15,000 00
Yes,	1	34	117	150	Oct. 1, 1891,	Nov. 3, 1891,	34	No,	7,962 87	1,000 00
Yes,	1	31	200	380	Oct. 1, 1891,	Nov. 1, 1891.	31	No,	18,000 00	1,500 00
Yes,	1	37	148	186	Oct. 1, 1891,	Nov. 7, 1891,	37	No,	11,500 00	1,700 00
Yes,	1	31	200	395	Oct. 1, 1891,	Nov. 1, 1891,	31	No,	8,000 00	1,200 00
Yes,	1	. . . .	200	250	Oct. 1, 1891,	Nov. 1 1891,	31	No,	5,000 00	1,000 00
Yes,	1	30	80	87	Oct. 1, 1891,	Nov. 6, 1891.	36	No,	2,800 00	400 00
Yes,	1	. . .	200	250	Oct. 1, 1891,	Nov 6, 1891.	36	No,	2,800 00	400 00
Yes.	1	36	80	80	Oct. 1, 1891,	Nov. 6, 1891,	36	No,	4,500 00	†
Yes,	1	41	300	595	Oct. 1, 1891,	Nov. 10, 1891.	41	No,	20,000 00	4,000 00
Yes,	1	40	150	310	Oct. 1, 1891,	Nov. 11 1891.	41	No.	7,500 00	1,200 00
Yes,	1	33	200	220	Oct. 1, 1891,	Nov. 3, 1891.	33	No,	4,000 00	150 00
Yes,	1	36	13	17	Oct. 1, 1891,	Nov. 5. 1891,	36	No,	800 00	200 00
Yes,	1	35	40	60	Oct. 1, 1891,	Nov. 4, 1891	35	No,	4,200 00	200 00
Yes,	1	34	140	305	Oct. 1, 1891,	Nov. 5, 1891,	35	No,	15,000 00	†
Yes,	1	30	60	60	Oct. 1, 1891,	Nov. 2 1891.	32	No,	2,700 00	†
Yes,	1	36	94	94	Oct. 1, 1891,	Nov. 5, 1891,	36	No,	4,519 15	332 45
Yes,	1	36	80	90	Oct. 1, 1891,	Nov. 6, 1891,	36	No,	5,000 00	1,000 00
Yes,	1	. . . .	13	3	Oct. 1, 1891.	*	. . .	. . .	. . . . .	. . . . .
Yes,	1	. . . .	12	12	Oct. 1, 1891.	*	. . .	. . .	. . . . .	. . . . .
Yes,	1	. . . .	35	35	Oct. 1, 1891,	*	. . .	. . .	. . . . .	. . . . .
Yes,	1	. . . .	4	4	Oct. 1, 1891,	*	. . .	. . .	. . . . .	. . . . .
Yes.	1	. . . .	3	3	Oct. 1, 1891,	*	. . .	. . .	. . . . .	. . . . .
Yes,	1	. . . .	12	15	Oct. 1, 1891,	*	. . .	. . .	. . . . .	. . . . .
Yes,	1	. . . .	7	7	Oct. 1, 1891,	*	. . .	. . .	. . . . .	. . . . .
Yes,	1	. . . .	8	8	Oct. 1, 1891,	*	. . .	. . .	. . . . .	. . . . .
Yes,	1	. . . .	33	33	Oct. 1, 1891,	*	. . .	. . .	. . . . .	. . . . .
Yes,	1	. . . .	9	9	Oct. 1, 1891.	*	. . .	. . .	. . . . .	. . . . .
Yes,	1	. . . .	20	20	Oct. 1, 1891,	*	. . .	. . .	. . . . .	. . . . .
Yes,	1	. . . .	1	1	Oct. 1, 1891,	*	. . .	. . .	. . . . .	. . . . .
Yes,	1	. . . .	2	2	Oct. 1, 1891,	*	. . .	. . .	. . . . .	. . . . .
Yes.	1	. . . .	14	14	Oct. 1. 1891.	*	. . .	. . .	. . . . .	. . . . .
Yes,	1	. . . .	21	21	Oct. 1. 1891.	*	. . .	. .	. . . . .	. . . . .

* Strike is still on

† Not estimated

INDUSTRIES	LOCALITY.	CAUSE OR OBJECT.
Coal mining,	Allegheny county,	For increase of wages.
Coal mining,	West Newton,	For increase of wages,
Coal mining,	West Newton,	For increase of wages,
Coal mining,	McDonald,	For increase of wages
Coal mining,	Scott Haven.	For increase of wages,
Coal mining.	Lucyville,	For increase of wages,
Coal mining,	West Brownsville,	For increase of wages,
Coal mining,	Port Royal,	For increase of wages,
Job compositors and pressmen,	Pittsburgh.	For a working day of nine hours,
Iron and steel works,	Pittsburgh.	Against a re-adjustment of working hours,
Furniture manufacturers,	Philadelphia,	For a working day of nine hours,
Textile mill.	Chester,	Against dockage for imperfect work,

Ordered by labor organization.	ESTABLISHMENTS.		Number of persons engaged in strike.	Number of persons involved in strike.	Beginning.	End.	Duration—days.	Succeeded.	Loss.	Employers' loss.
	Number.	Days closed.								
Yes,	1	32	49	54	Oct. 2, 1891.	Nov. 4, 1891	32	No,	$3,200 00	$1,000 00
Yes,	1	20	130	130	Oct. 3, 1891,	Oct. 26, 1891,	23	No.	6,000 00	1,000 00
Yes,	1	25	275	275	Oct. 3, 1891,	Nov. 2, 1891,	30	No,	12,000 00	600 00
Yes,	1	30	400	450	Oct. 3, 1891.	Nov. 2, 1891,	30	No,	20,000 00	†
Yes,	1	27	100	100	Oct. 3, 1891.	Nov. 4, 1891,	31	No,	6,075 00	†
Yes,	1	20	45	55	Oct. 3, 1891,	Oct. 25, 1891,	22	No,	2,200 00	600 00
Yes,	1	34	40	45	Oct. 4, 1891,	Nov. 8, 1891,	34	No,	3,000 00	1,000 00
Yes,	1	10	75	75	Oct. 5, 1891,	Oct. 15, 1891,	10	No,	2,000 00	530 00
Yes,	1	. . . .	7	7	Oct. 15, 1891,	*	. . .	. . .	. . . . .	. . . . .
No,	1	. . . .	200	200	Nov. 6, 1891,	Nov. 10, 1891,	4	No,	1,500 00	†
Yes,	1	. . . .	48	48	Dec. 10, 1891,	*	. . .	. . .	. . . . .	. . . . .
No,	1	6	140	160	Dec. 1, 1891,	Dec 8, 1891,	6	No,	1,100 00	3,000 00

* Strike is still on.

† Not estimated.

STRIKES AND LOCKOUTS--MISCELLANEOUS CAUSES.

OCCUPATION.	CAUSE.	RESULT.
Iron and steel works employes,	To compel recognition of Amalgamated Iron and Steel Association,	Failed.
Rolling mill employes,	Against change in machinery,	Failed.
Cork works employes,	Against interference of a labor organization,	Failed.
Employes woolen mill,	Against the imposition of fines,	Failed.
Steel mill employes,	Workmen refused to work with non-union men,	Failed.
Cork works employes,	Change in methods of working,	Failed.
Rolling mill employes,	Firm refused to recognize trade union,	Failed.
Planing mill employes,	Firm refused to recognize trade union,	Failed.
Planing mill employes,	For a nine-hour working day,	Failed.
Stove works employes,	Refused to agree to new scale of wages,	Failed.
Silk plush workers,	Against the introduction of a new industry,	Failed.
Woolen mill employes,	Refusal of firm to discharge an inspector,	Failed.
Coal miners,	For semi-monthly payments,	Failed.
Slate quarry employes,	For payments of arrears of wages,	Sueeeeded.
Stove works employes,	Against employment of a non-union man,	Failed.
Railroad laborers,	Against the discharge of a fellow workman,	Failed.
Coal miners,	Men refused to guarantee mine supplies,	Failed.
Job compositors and pressmen,	For a working day of nine hours,	Still unsettled.
Iron and steel works employes,	Against a re-adjustment of working hours,	Failed.
Furniture manufacturers,	For a working day of nine hours,	Still unsettled.

REPORT

OF THE

FACTORY INSPECTOR.

OFFICE OF FACTORY INSPECTOR,
HARRISBURG, *June 1, 1891.*

HON. ALBERT S. BOLLES, *Chief of the Bureau of Industrial Statistics:*

DEAR SIR: I herewith present my report as factory inspector from December 1, 1890, to June 1, 1891. In explanation of the work of inspection, it may be stated that the inspections in the first district, from December 1, 1890, to January 1, 1891, were conducted by Mrs. Belle McEnery and Mr. Wesley S. Godfrey, and from the latter date to June 1, 1891, by the same persons and also by Miss Mary O'Reilly, she having been appointed at the beginning of the year. The inspections in the third district, from December 1, 1890, to January 1, 1891, were conducted by Mrs. Nan Y. Leslie and Mr. M. N. Baker, and from the latter date to the end of my term by Mr. Baker alone, Mrs. Leslie having resigned on the first of January, 1891.

Yours very respectfully,

WM. H. MARTIN,
Factory Inspector.

1 E–10–91.

ACCIDENTS—FIRST DISTRICT.

Date of accident	Person Injured.	Age (years).	Establishment in which accident occurred.	Location.	Machine, etc., on which accident occurred.	Particulars and extent of injury.
1890.						
May 8,	Mary Ludden,	16	Mrs. Kate Jenner,	Philadelphia.	Collar ironing machine,	Caught in machine; crushed hand; will probably have to be amputated.
May 25,	John S. Hoch,	30	A. J. Reach Company,	do.	Base ball press,	Negligence on part of employe; loss of one finger.
Dec. 4,	Walter Harvey,	20	Schlichter Jute Cordage Co.,	do.		Falling of a bale of jute; right ear badly lacerated and leg fractured.
Dec. 5,	Elwood Albanny,	18	Booth & Bros.,	do.	Carding machine,	Caught in cylinder; scalp partly torn off.
Dec. 5,	John Aikens,	21	Burnham, Parry, Williams & Co.,	do.	Engine,	Caught between engine and tender; injured internally.
Dec. 8,	Wm. McCabe,	14	Finley & Co.,	do.	Gearing of machine,	Hand caught in gearing; amputation necessary.
Dec. 8,	John Mulladore,	42	T. Rowland & Sons,	do.	Press machine,	Caught his hand in machine; hand badly crushed.
Dec. 11,	John Moylan,	21	Burnham, Parry, Williams & Co.,	do.	Shell of boiler,	Shell of boiler fell on him, crushing him; was killed instantly.
Dec. 15,	James McCullough,	55	do do.	do.	Bolt from steam crane,	A bolt struck him on the head; skull fractured.
Dec. 19,	John Keller,	36	do do	do.	Locomotive wheel,	Wheel fell against him; contusion of knee cap.
Dec. 20,	John McCloud,	33	do. do.	do.	Fly wheel,	Foot caught in fly wheel; foot slightly injured.
Dec. 29,	Peter Lacy,	33	do. do	do	Frame,	Frame falling against him, leg and hip bruised
1891.						
Jan 6,	Thomas Cleary,	24	Hoopes & Towsend,	do.	Punching machine,	Carelessness; amputation of part of first joint of index finger of right hand.

Jan.	7.	Charles Guenther. .	16	A. M. Collins.	do.	Card cutting machine . . .	Clothing caught in the machine: had no business there; strained neck.
Jan.	7.	Rosa Wingate, . . .	Unk.	Wm. Whitaker & Sons.	do	Loom, ...	Right arm bruised while trying to clean her loom without stopping it
Jan.	7.	John Garen.	42	Hoopes & Towsend, ...	do	Press machine.	Accidental: amputation of fourth finger of right hand.
Jan.	10,	Isaac Couchin. . . .	19	Burnham, Parry, Williams & Co..	do.	Planing machine.	Leg lacerated through neglecting to stop the machine before oiling it.
Jan.	15.	David Coogan. . . .	14	Hoopes & Towsend.	do.	Rivet machine, ...	Was trifling with machine: was not employed on any machine: result: third finger of right hand amputated.
Jan.	16,	Robert Chapman, .	18	Burnham, Parry, Williams & Co..	do.	Frame, ...	[upon it. Foot cut by a frame falling off trestle
Jan.	16,	John Smith.	60	Chester Manufacturing Co.	do.	Pulley wheel.	Was struck in the stomach with the handle of the broom with which he was sweeping dust off the pulley wheel: death resulted therefrom.
Jan.	17.	James Rocks.	18	Hoopes & Towsend, ...	do.	Punching machine.	Trying to remove scraps of iron with his hand instead of a piece of iron; thumb lacerated.
Jan.	26,	Daniel Talrey. . . .	42	Burnham. Parry, Williams & Co.,	do.	Sheet of steel.	Bruised foot by the falling of a sheet of steel on it.
Feb.	3.	John M. McHugh. .	48	do. do.	do.	Roller.	Foot caught between rollers; foot injured.
Feb	1,	Edwin F. Davis, . .	24	James Stafford, ...	do.	Gig machine.	Arm lacerated by being wedged between the cylinder and frame.
Feb.	6,	E. E. Barton, . . .	29	Burnham. Parry. Williams & Co .	do.	Belt of hand saw.	Caught in the belt while putting it on the band saw: flesh wound.
Feb.	12,	Charles Anderson. .	24	A. H. Wirz, ...	do.	Polishing wheel.	Nose was cut with a chip of iron which flew off the polishing wheel while working.
Feb.	13,	Samuel Draves. . .	23	do.	do.	Press machine.	End of fore finger cut off by carelessly putting his foot on the treadle of the machine before removing his finger.
Feb.	13.	H. McLaughlin. . .	21	Burnham. Parry, Williams & Co..	do	Loaded truck.	The loaded truck came in contact with a block and swung around, throwing him down and breaking his arm.
March	6.	John Martin, ...	13.	McNeely & Co..	do.	Elevator.	Disobedience; foot caught between the drum-head and elevator and was crushed.

ACCIDENTS—*Continued.*

Date of accident	PERSON INJURED.	Age (years).	Establishment in which accident occurred.	Location.	Machine, etc., on which accident occurred.	Particulars and extent of injury.
March 6.	Harry Donnelly. . .	30	Burnham, Parry, Williams & Co.,	Philadelphia.	Planer.	He was raising a sheet of iron to place on the planer. The chain slipped off the iron which fell against his leg, breaking it.
March 13.	Matthew Ash. . . .	14	Verlinder Bros..	do.	Garnet machine.	Cleaning machine while in motion, which was contrary to orders. Fingers of right hand taken off.
March 13.	Mary Beckman. . . .	17	Erben, Search & Co., ...	do.	Gill box, ...	By putting her hand under the guard of the gill-box (instead of using hooks), her fingers were punctured by the pins.
March 16.	Albert Shaeffer. . .	15	McNeely & Co..	do.	Slating machine.	By slipping; fingers caught in cog of machine (accidental); took cold and died therefrom.
March 20.	Ada Gilliard. . . .	18	R. Kenworthy & Bro.. . . .	do.	Gill-box, ...	Was caught while oiling machine while in motion; lacerated wound of the head.
March 28.	James Connell. . . .	26	Burnham, Parry, Williams & Co..	do.	Engine.	Struck his foot; injury slight.
March 31	Charles Hoger. . . .	14	Henry J. Schwehn.	do.	Bobbing frame.	Attempted to put belt on machine; caught his fingers between the lacing of the belt and pulley: fingers lacerated.
April 11.	Pat. O'Brien, ...	23	Burnham, Parry, Williams & Co.,	do.	Hot metal.	In carrying a pot of hot metal the handle slipped and contents spilled; foot burned
April 14.	James V. Royal. . .	14	Domon Bros.	do.	Elevator, ...	Cable broke: car fell from second to first floor; wrist and ankle sprained.
April 17.	P. McCauley. . . .	Unk.	E. H. Morris.	do.	Carding machine.	He endeavored to remove the fly from under the roller: lacerated arm.
April 23.	Joseph Kent. . . .	16	Bader, Adamson & Co. . . .	do.	Opening machine.	Carelessness; two fingers crushed by the roller.
April 24.	David Barley. . . .	23	Job Beatty's Sons, ...	do.	Falling of a clapper, ...	Accidental; fracture of little finger

April 28,	Mary McFawn. . . .	14	Erben. Search & Co..	do.	Spinning frame.	Finger caught between wheels; slight injury.
May 1.	John Berry.	23	Shaw. Esery & Co..	do.	Shafting of press machine. .	Slipped while attempting to oil the shafting and in trying to save himself threw out his arm; caught hold of the belt; was thrown against ceiling; arm broken in two places and otherwise injured.
May 5.	John Kerdish. . . .	28	John Bromley & Sons.	do.	Carding machine.	While sweeping the fly from the ceiling caught the broom in the pulley wheel on the shaft above, striking him in the abdomen; inflammation set in and he died
May 7.	John Hoffman. . . .	13	Estate of Joseph Barnhurst. . .	do.	Elevator.	He was amusing himself with the gong on the side and not watching; had his arm caught under the beam; arm broken
May 13.	John Latzasch. . . .	20	Hoopes & Towsend, ...	do.	Punch machine.	In trying to brush away scrab from under the punch, had his index finger crushed: extent of injury loss of said finger.
May 14.	Charles Bell, ...	14	Burnhan. Parry. Williams & Co.,	do.	Cutting-off machine.	Caught his finger in the gearing of cutting-off machine: lacerated finger.
May 19.	David Schwartz, . .	15	McNeely & Co , ...	do.	Truck.	While this lad and another companion were oiling a truck they let the platform slip from their hands and it fell on the boy's toe, crushing it; amputation of the toe necessary.
Dec. 13.	Walter Hinde, . . .	15	Erben. Search & Co..	do.	Wool-combing machine. . .	Carelessness: loss of half of one finger.
Dec. 26	Frederick Shaler, .	20	W. E. & E. D. Lockwood. . . .	do.	Printing press.	Caught his thumb in cog wheel of machine; loss of thumb.
March 4.	E. W. Morstadt. . .	28	Oliver K. Reed	do.	Engine.	Carelessness Loss of part of finger.
March 16,	Hattie Stewart. . .	17	Stephen F. Whitman & Son. . .	do	Elevator.	Miss Stewart's own carelessness, as she was not employed to or near the elevator; cut and bruised about the head.
March 23.	Walter Pettingill.	17	Marks Bros..	do.	Elevator.	Crushed by elevator; died ten minutes after the accident occurred
May 22.	Edward Brett. . . .	16	Wilson H. Brown, ...	Germantown, Phila.. . . .	. . . . .	Carelesness; right leg broken between the knee and ankle
May 22	Albert Lewis. . . .	22	Geo. S. Harris & Sons.	Philadelphia.	. . . . .	Case of paper falling on his leg; contusion of left leg.

ACCIDENTS—SECOND DISTRICT.

Date of accident.	Person Injured.	Age (years).	Establishment in which accident occurred.	Location.	Machine, etc., on which accident occurred.	Particulars and extent of injury
1891.						
Jan. 12.	Booth Bridge.	50	Wilkes-Barre Lace Manufacturing Company.	Wilkes-Barre.	Elevator.	Belt breaking was the cause; arm and back bruised.
Jan. 19.	Sarah A. Landis.	12	Arnold & Co.	Lancaster.	Knife of tapering machine.	Disobeying orders: lost part of little finger.
Feb. 12.	J. Newrine.	17	Williamsport Iron and Nail Works.	Williamsport.	Nail machine.	Sleeve caught in set screw; arm dislocated.
March 6.	Henry Swemly.	31	P. R. Gladfelter.	Spring Grove, York county.	Shafting.	Caught while coupling on shaft: arm torn off and injured internally
March 28.	Joseph Longhlin.	16	Reading Hardware Company.	Reading.	Vault.	Explosion of gas in vault: hands and face burned.
April 17.	Christian Deamer.	16	Honesdale Shoe Company.	Honesdale.	Molding machine.	Caught his hand in machine: lost part of three fingers of left hand
April 30.	Henry Shoemaker.	15	Pioneer Silk Company.	Allentown.	Spinning machine.	Caught in belt: hand and part of arm had to be amputated.
May 26.	Ellen Ehret.	14	Easton Boot and Shoe Company.	Easton.	Sole leather raising machine.	Caught her finger under the knife, which it cut off below first joint.

ACCIDENTS—THIRD DISTRICT.

1891.						
Dec. 2.	Henry D. Baufield.	15	Rochester Tumbler Company.	Rochester.		Fell on broken glass, cut wrist
Dec. 14.	Charles Jackson.		Carnegie, Phipps & Co.	Munhall.		Finger crushed by the falling of a bar
Dec. 17.	Matt Dolan.	17	Pittsburgh Tube Company.	Pittsburgh.	Bar puller.	Carelessness: finger smashed
Dec. 17.	Adam Linkan.		Phillips, Nimmick & Co.	do. S. S.	Iron buggy.	Carelessness: loss of one finger.
Dec. 18.	S. Laroyisky.		do. do.	do. do	Hauling wagon.	Carelessness; loss of one finger

Dec.	19.	John Semidt.		do do.	do. do.	do. do	Carelessness; loss of one finger.
Dec.	30.	S. K Hoak.		Park Bros. & Co..	do.		Injured while charging steel billets in furnace; contusion of abdomen.
Dec.	30.	James Killa,	36	do. do.	do.	Hydraulic crane,	Peel struck him on leg and dislocated knee.
Jan.	2,	Wm Neely.	56	Moorhead, McCleane & Co	do		Explosion of furnace cinder; hurnt about the head. hands and feet.
Jan	2,	John Smith.	15	National Tube Works Company.	McKeesport.	Railroad track in mill.	Carelessness; loss of life.
Jan	2.	Wm. Williams	55	Carnegie, Phipps & Co.,	Pittsburgh,	Crane,	Accidental; toes of right foot smashed.
Jan	5.	James Cosgrove.	17	Lindsey & McCutcheon.	Allegheny.	Pin-driver.	Caught finger in pin driver and smashed the end of it.
Jan	6.	John Mikalizin	26	National Tube Works Company	McKeesport,	Overhead shafting.	Caught in shafting; death
Jan	8.	S. Jackomowich.		Phillips Nimmick & Co..	Pittsburgh. S. S..	Hauling wagon.	Carelessness; hand hurt
Jan.	9.	Charles Davis,		Carnegie, Phipps & Co.	Munhall,	Belting of cold saw.	By stepping through belt close to large pulley: was killed
Jan.	9.	John Connealy,	22	Shiffler Bridge Company	Pittsburgh.	Drift-pin and hammer.	Was drifting a hole with a drift-pin and two pieces broke off and flew into his eye; loss of left eye
Jan	14,	Thomas Johnston.	21	Penn Tube Works,	do.	Pipe-cutting machine.	Fell from platform and was killed.
Jan	14,	Cbrist Arndt.	55	Pittsburgh Forge and Iron Co.,	Allegheny.		Struck with hot billet; face badly burned.
Jan	16.	Andrew Kennier,	44	Carnegie, Phipps & Co.,	Pittsburgh,	Crane,	Chain broke with a heavy mold. which fell and caught him; died from injury.
Jan.	17.	A Kopp.	35	H. F. Watson	Erie.	Shaft.	In trying to throw a belt while shaft was running; hroke his arm.
Jan	29,	William Brown.	28	Carnegie Bros & Co..	Bessemer,		Killed by coming in contact with an electric wire.
Jan.	29.	Thomas Comer.		do. do.	do.		Fractured his arm by falling from a ladder.
Jan.	30.	Edw McLaughlin.		do. do.	do.		Ankle burned by hot metal
Feb	2.	J. Feddor,		do do.	do.		Hit by piece of limestone; skull fractured.
Feb.	4,	Daniel McCoy,	20	Jones & Laughlin.	Pittsburgh.		Ankle fractured by the falling of a steel bloom

ACCIDENTS—THIRD DISTRICT—*Continued.*

Date of accident.	PERSON INJURED.	Age (years).	Establishment in which accident occurred.	Location.	Machine, etc., on which accident occurred.	Particulars and extent of injury.
1891.						
Feb 4.	William Lewis. . . .	. . .	Carnegie, Phipps & Co.	Munhall.	. . . . .	Cut about the mouth and head, caused by a plate slipping from the chain by which it was being raised.
Feb. 5.	James Lucas.	. . .	Carnegie Bros. & Co.	Bessemer.	. . . . .	Shoulder broken; injured internally: caused by falling from a car.
Feb 6.	Albert Crantz. . . .	. . .	do. do.	do.	. . . . .	Run over by a yard engine: result, death.
Feb 7.	Edward Devinney,	. . .	do. do.	Braddock.	. . . . .	Run over by yard engine: death.
Feb 11.	Ralph Moore, . . .	13	Park Bros. & Co	Pittsburgh.	. . . . .	Run over by a train of cars: loss of a leg.
Feb. 16.	Fred Ammon, . . .	24	H. J. Heinz & Co.	Allegheny.	Sawdust-bin, ...	Suffocation: death.
Feb 17.	E. G. Lynch.	28	Pittsburgh Tube Company . .	Pittsburgh, ...	. . . . .	Truck load of pipe ran over foot; one toe broken and three smashed.
Feb 20.	Nick Stample. . . .	. . .	Carnegie Phipps & Co.	Munhall.	. . . . .	Struck with mold while same was being swung into pit: shoulder blade broken.
Feb. 25,	Michael Burns. . . .	. . .	Carnegie Bros. & Co.	Braddock.	. . . . .	Leg crushed by car passing over it; died the 28th.
Feb. 26,	James Bowers. . . .	. . .	do do.	Bessemer.	. . . . .	Arm crushed between dead block while in the act of coupling cars.
March 18,	Owen Hankinson. .	27	Crescent Steel Company. . . .	Pittsburgh.	Rotary puddler, ...	Explosion of melted slag: burnt about head and shoulders.
March 18.	Fred Bernebery, . .	34	do do. . . .	do.	do. do.	Explosion of melted slag; cut about head and neck.
March 18,	Charles Gustafson. .	27	do. do . . .	do.	do. do.	Explosion of melted slag; left thigh broken and injured about head.
March 18.	Ernst Whittman. . .	39	do. do. . . .	do.	do. do.	Explosion of melted slag: arm and fingers broken, ribs broken and otherwise injured.

March 24.	William Etzel.	. . .	W. N. Matchneer, ...	do	Elevator, ...	Walked into elevator shaft after lifting guard; leg fractured.
April 13,	Henry Dinkle. . . .	19	Pittsburgh Tube Company. . .	do.	Grindstone, ...	Hand caught between tool and grindstone; loss of one finger.
April 15,	Daniel Fohrman. . .	40	Erie City Iron Works.	Erie, ...	. . . . .	Shears fell and struck man on head; flesh wounds.
April 18,	Hugh Stewart, . . .	30	Baker Chain and Wagon Iron Manufacturing Company.	Allegheny.	Power hammer, ...	Set the hammer in motion while arm was under the hammer; wrist bruised.
April 22.	George Mohn, Jr. . .	31	Mohn Bros., ...	Pittsburgh, ...	Elevator, ...	Stepped down elevator well: bruised.
April 24.	James E. Ellinger. .	16	Park Bros. & Co., ...	Allegheny.	. . . . .	Hit by piece of steel; skull fractured.
April 28.	Louis Schmidt. . . .	40	Pittsburgh Tube Company, . . .	Pittsburgh.	Furnace, ...	Hit in stomach while charging pipe furnace; injured internal.
May 2.	Charles Kitzmiller. .	18	Collins Cigar Company.	do.	Elevator, ...	Fell down elevator well; killed.
May 6.	S. Bratinridge, . . .	. . .	Carnegie Bros & Co., ...	Braddock, ...	. . . . .	Run over by locomotive: death.
May 12,	M. Praschok, ...	. . .	do. do.	do.	. . . . .	Ore barrow ran over his foot: foot badly hurt.

STATISTICS OF FACTORIES VISITED.—DISTRICT No. 1.

PHILADELPHIA.

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of Inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12 years.	12 to 16 years.				
Jacob Kay.	Tailoring.	15	10	.	2	Bad.	Feb. 10. .	Comply with section 10.	Complied.
William Brown.	do.	2	11	. .	. . .	do.	Feb 10. .	Comply with section 10.	
John Bradburn, ...	do	3	11	. .	. . .	do.	Feb. 10. .	Comply with section 10.	Removed.
Sunday School Times.	Printing papers.	49	15	. .	. . .	Good.	Feb. 10		
Elchoff & Kramer, ...	Bookbinding.	6	10	. .	. . .	do.	Feb. 10.		
John Gilmore, ...	Tailoring, ...	32	18	. .	. . .	Fair.	Feb. 10. .	Comply with sections 10 and 12.	Complied.
Magee Art Company.	Art novelties, ...	2	10	. .	. . .	Bad.	Feb. 11. .	Comply with section 10.	Complied.
F. E. Wright.	Book publishers.	4	12	. .	. . .	Good.	Feb. 11.		
Novelty Company, ...	Infants' and children's caps.	3	77	. .	4	do	Feb. 12.		
R S. Green.	Branch tailoring.	15	20	. .	8	do.	Feb. 12.		
A. Kingston.	Bookbinding.	6	30	. .	. . .	do.	Feb. 13.		
E. O. Thompson.	Tailoring, ...	10	15	. .	. . .	do.	Feb. 13.		
Thomas Sykes.	Rag sorting.	3	16	. .	. . .	do	Feb. 16.		
Mrs. Jenners.	Laundry.	4	17	. .	6	do.	Feb. 17.		
Tatham & Bros., ...	Pantaloons.	9	30	. .	4	Fair.	Feb. 18. .	Comply with sections 10 and 12.	Complied.
George Miller & Son.	Confectionery.	30	60	. .	24	Good.	Feb. 19.		
Lockwood Manufacturing Company.	Envelopes, tags and paper boxes. .	27	63	. .	2	do.	Feb. 20.		
Armstrong, Craig & Co..	Paper bags, ...	20	15	. .	. . .	do.	Feb. 20.		

Corn Exchange, (J T Bailey & Co)	Rags, rope and twine. . . .	250	250	21	do.	Feb. 24.	Comply with sections 2, 5, 7, 8 and 12.	Complied.
Southwark Mills.	Wool and worsteds, ...	5	495	10	do.	Feb. 25.		
Robinson & Loebel.	Jellies and preserves. . . .	15	10	. . .	do.	Feb. 27.		
Campbell & Elliott.	Cotton and woolen goods, . .	150	275	4	Fair.	Feb. 27.	Comply with sections 7, 8, and 10.	Mill destroyed by fire.
Pennfield Truss Manufacturing Company	Trusses and medical appliances.	24	16	. . .	Good.	Mar. 4.		
Wyeth Bros. Chemical Works. . .	Chemicals, ...	59	168	2	do.	Mar. 4.		
Williams Manufacturing Company.	Cotton and woolen goods, . .	70	80	21	do.	Mar. 4.		
Victoria Manufacturing Company, .	Textile fabrics, ...	25	75	6	do.	Mar. 5.		
Textile Manufacturing Company, (Jas. Robert-)	do.	15	15	. . .	do.	Mar. 5.		
John O Watts.	do	22	60	4	do.	Mar. 6.		
James Brison.	do	11	16	. . .	do.	Mar. 6.	Comply with sections 7 and 12.	Complied.
Stewart Bros Manufacturing Co., .	Woolen and cotton goods. . .	6	58	2	Fair.	Mar. 11.	Provide suitable water closets.	Complied.
Eagle Shirt Manufacturing Co.. . .	Shirt cloth, ...	16	44	. . .	Good.	Mar. 11.		
Arlington Manufacturing Company,	Ginghams, ...	27	8	1	Fair.	Mar. 11.	Insufficient number of water closets.	
Joseph Greer.	Worsted fabrics, ...	15	15	. . .	do	Mar. 11.	Insufficient number of water closets.	
Connelly Manufacturing Company,	Cotton goods, ...	12	58	. . .	Good	Mar. 12.		
Geo Campbell & Co..	Worsted yarns, ...	250	350	200	do.	Mar. 13.		
Granlees Manufacturing Company,	Textiles, ...	40	65	. . .	Fair.	Mar. 13.	Comply with sections 10, 12 and 18. . . .	Complied.
Bonanza Manufacturing Company,	do.	10	70	. . .	Good.	Mar. 16.		
Pennsylvania Manufacturing Co., .	Woolen and worsted cloths .	200	200	12	do.	Mar. 16.		
Croft & Allen, Manufacturing Co.,	Confectionery.	175	200	. . .	do.	Mar. 25.		
Dr Jayne's Estate.	Pamphlet binding and book-folding.	5	25	. . .	do.	Mar. 31.		
Avil Printing Establishment. . . .	Printing and lithographing.	100	25	6	do.	Apr. 1.		
Oldach Book Bindery, ...	Bookbinding, ...	12	20	. . .	do.	Apr. 2.		
Samuel S. Carvin, ...	Printing and lithographing. .	20	6	4	do.	Apr. 2.		
Tracy Manufacturing Company. . .	Worsted yarns, ...	75	400	50	Fair.	Apr. 3.	Comply with sections 7, 8 and 10.	Complied.
Avil Printing Establishment. . . .	Printing and publishing. . . .	85	100	. . .	Bad.	Apr. 6.	Comply with section 10, ...	Complied.

PHILADELPHIA—*Continued.*

NAMES OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12 years.	12 to 16 years.				
Bunting Manufacturing Company,	Textile goods,	26	19		1	Good.	Apr. 7.		
National Optical Company,	Spectacles and eye glasses,	43	117		23	do.	Apr. 7.	Comply with section 12,	Complied.
Henry Flannel Mills,	Cassimers and flannels,	150	150		31	do.	Apr. 9,		
Quaker City Cooperage Company,	Barrels,	235			21	do.	Apr. 10.		
Whitely Company,	Woolen, cotton and mixed yarns.	33	15		15	do.	Apr. 14,	Comply with section 12,	Complied.
Howell Bros.,	Paper hangings,	120			32	do.	Apr. 15,	Comply with section 12.	
Cresswell & Washburn,	do.	54			12	do.	Apr. 15,	Comply with sections 3 and 12,	Complied.
Sellers & Hoffman,	Cotton and woolen fabrics,	255	45		2	Bad.	Apr. 16,	Comply with section 10 and guard hoist-door.	Closed business.
Callahan Bros.,	Textile goods,	100	200		75	Good.	Apr. 17,	Comply with sections 3, 9 and 12.	
George Callahan,	Cotton yarns and warps,	45	69	1	21	do.	Apr. 17.		
Pennsylvania Worsted Factory,	Worsted yarns,	28	82		18	do.	Apr. 24.		
Ridgway Manufacturing Company.	Chenille goods,	10	16		7	do.	Apr. 24.		
Barlow Manufacturing Company,	Upholstery cloth and chenille curtains.	16	14		8	do.	Apr 27.		
Providence Worsted Mill,	Yarns,	15	65		35	do.	Apr. 28.		
Brooks Manufacturing Company,	Chenille curtains and upholstery goods.	219	94		7	Fair.	Apr. 28,	Comply with section 10 and clear passage leading to fire escape and protect openings.	Complied.
Frank J. Smith,	Laundry,	4	15			do.	May 11.		
James Campbell,	do.	5	20		1	do.	May 13.		

CARDINGTON, DELAWARE COUNTY.

Wolfenden, Shore & Co.	Cotton and woolen goods.	185	100	..	30	Good.	Mar. 26.	Comply with section 3, 8 and 9.	Complied.

UPPER DARBY, DELAWARE COUNTY.

Garrett & Son.	Paper.	24	24	..	...	Good.	Apr. 23.		

HADDINGTON.

Coaquanock Mills.	Textile goods.	104	86	..	34	Fair.	Apr. 23.	Comply with sections 10, 12 and 18.	Complied.

MANAYUNK, PHILADELPHIA.

Ashland Paper Company,	Paper	45	10	..	...	Good.	May 6.		
Belmont Woolen Mill,	Woolen waste, etc.	40	20	..	...	Fair,	May 6.	Comply with sections 7 and 10.	Complied.
Clegg Manufacturing Company.	Cotton fabrics.	22	21	..	4	do.	May 12.		

PHILADELPHIA.

Sherman Carpet Mills.	Ingrain carpets.	75	125	..	2	Good.	Dec. 2.		
Oxford Carpet Mills,	do.	80	70	..	2	do.	Dec. 2.		
Waterloo Hosiery Mills,	Hosiery,	25	100	..	36	do.	Dec. 2.		
Emil Wahls,	Bone buttons.	125	10	..	15	do.	Dec. 2.	Comply with sections 2 and 3.	Complied.
Philadelphia Knitting Company.	Silk hosiery.	11	16	..	...	do.	Dec 4.		
Frank Schoble & Co.	Felt hats.	65	27	..	...	do.	Dec. 5.		
Montgomery Mills.	Tapes, braids, bindings.	25	225	..	16	do.	Dec. 5.	Comply with sections 2 and 3.	Complied.
Norris Carpet Mills.	Ingrain carpets.	40	30	..	...	do.	Dec. 5		
Mange, Wiener & Co.	Cigars,	225	75	..	11	do.	Dec. 5.		

PHILADELPHIA — *Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 18.	18 to 21.				
Cresswell & Washburn,	Paper hangings,	87	. .	. .	17	Good	Dec. 8,		
Howell Bros.,	do.	225	. .	. .	70	do.	Dec. 8		
Delaware Carpet Mills,	Brussels and Wilton carpets,	190	50	. .	40	do.	Dec. 9,		
National Hardware and Malleable Iron Works,	Builders' hardware,	320	5	. .	16	do	Dec. 9,		
E. M. Woodward,	Ginghams,	5	14	. .	. .	do	Dec. 9		
Dickey & McMaster,	Stair carpets,	27	10	. .	1	do	Dec. 9,		
Victoria Carpet Mills,	Ingrain carpets,	20	30	. .	5	do.	Dec. 9,		
John Bromley & Sons,	Lace curtains,	362	258	. .	47	do.	Dec. 10,		
Ivins, Dietz & Magee,	Brussels and ingrain carpets,	125	200	. .	17	do.	Dec. 10,		
A. J. Cameron & Co.,	Worsted yarns,	2	15	. .	2	do.	Dec. 12,		
Hoodfinch & Wilson,	Carpets,	35	35	. .	1	do	Dec. 12,		
Westphalia Mills,	Chenille curtains,	30	20	. .	. .	do.	Dec. 12,		
Wilson & Co.,	Hosiery,	7	43	. .	7	do.	Dec. 12,		
Pennsylvania Worsted Mills,	Worsted yarns,	25	83	. .	15	do.	Dec. 16,	Comply with sections 1, 2, 3, and 18,	Complied,
Oriental Mills,	Upholstery goods,	165	60	. .	15	do.	Dec. 16,	Comply with sections 1, 2, 3, and 18,	Complied,
Bruning & Ludwig,	Ingrain carpets,	13	11	. .	. .	do.	Dec. 17,		
Graham Reid,	Hosiery,	6	40	. .	7	do.	Dec. 17,		
Camden Thread Company,	Thread,	9	16	. .	. .	do.	Dec. 17,		
Jonathon Ring & Son,	Woolen and merino yarns,	12	18	. .	. .	do.	Dec. 17,	Replace gate to elevator,	Complied

Ontario Mills	Woolen and worsted goods	75	75	2	do.	Dec 18.			
William Tetlow,	Hosiery yarns.	23	13	5	do.	Dec. 18.			
EnterpriseManufactnring Company.	Novelties and coffee mills.	699	1	30	do.	Dec. 18.	Comply with section 1.	Complied.	
Powell & Bro..	Hosiery,	38	400	105	do.	Dec 23.	Comply with section 1.	Complied	
Tracy Worsted Mills.	Worsted yarns.	90	360	50	do.	Dec. 23,	Comply with sections 1. 7 and 10.	Complied.	
Star Braid Mills	Worsted yarns and braids,	100	250	62	do.	Dec. 23,	Comply with section 1.	Complied.	
Columbia Carpet Mills.	Ingrain carpets,	35	35		do.	Jan. 2.			
Scott Manufactnring Company	Hosiery.	2	56	45	do.	Jan 5.			
Southwark Mills,	Woolen goods.	186	100	4	do.	Jan. 5.	Comply with sections 2. 3 and 18	Complied.	
Ryer Mills Company.	Upholstery goods.	37	10	4	do.	Jan. 5.	Comply with sections 2. 3, 7 and 18.	Complied.	
Empire Mills.	Cotton and woolen goods.	17	38		do.	Jan. 5.			
Henry Whitaker's Sons.	Cotton yarns.	27	8	2	do.	Jan 6.	Comply with sections 2 and 3.	Complied.	
Franklin Hosiery Mill.	Hosiery.	4	10	2	do.	Jan. 6.			
Jos. T. Smith.	Worsted yarns.	5	35	14	do.	Jan. 6.			
A. White.	Cotton and woolen goods.	22	25	7	do.	Jan 6.			
Robert J. & R. Ritchie.	Upholstery goods,	63	64	16	do.	Jan 8			
Star Mills.	Cotton goods.	70	80	10	do.	Jan. 8			
Hampden Mills.	Woolen and worsted goods,	125	125	10	do.	Jan. 8.			
Jefferson Mills.	Carpets.	34	32		Poor.	Jan. 9,	Cleanse water closets.	Complied.	
Model Carpet Mills.	do.	65	60		do.	Jan. 9,	Cleanse water closets.	Complied.	
William Penn Mills,	Cotton and woolen goods.	20	20		do.	Jan 9.	Cleanse water closets and box belts.	Complied.	
Providence Dye Works.	Dyeing and finishing goods.	267	33	10	Good,	Jan. 12,	Comply with sections 2. 3. 7 and 18	Complied.	
Bromley Bros..	Carpets. rugs, etc	300	200	13	Fair.		Comply with sections 7. 10 and 12.	Complied	
Fairmount Worsted Mills.	Worsted and woolen yarns.	29	250	59	Good,	Jan 13.			
Keystone Mill.	Worsted yarns.	12	28	5	do.	Jan. 13.			
John Forrest.	Yarns, printing and bleaching.	32	8	4	do.	Jan. 13.			
Lazarus, Schwarz & Lipper.	Dress trimmings. etc.	51	52	9	do.	Jan. 13.			
Pittfield Mills	Cotton goods.	26	60	3	do.	Jan. 13.			
Getty & Spratt.	Carpets.	24	16	2	do.	Jan. 14.			

PHILADELPHIA—*Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
J. D. Orne & Co.,	Knit Goods,	1	15	. .	2	do.	Jan. 16.		
B. Hooley & Son,	Silk thread,	9	40	. .	7	do.	Jan, 16.		
James Conaway & Co	Umbrella frames,	50	150	. .	12	do.	Jan. 16.		
A. Holmes,	Carpets,	23	15	. .	. .	do.	Jan. 19.	Protect elevator openings,	Complied.
Oxford Mills,	Hosiery, shawls, etc.,	25	100	. .	18	do.	Jan. 19.	Comply with sections 2, 3 and 18,	Complied.
Somerset Mills,	Carpets,	45	50	. .	. .	do.	Jan. 19.		
Crown Knitting Mills,	Knit goods,	25	100	. .	3	do.	Jan. 22.		
Bader, Adamson & Co.,	Glue and curled hair,	350	. .	. .	35	do.	Jan. 22.		
Richmond Hosiery Mill,	Hosiery,	38	87	. .	18	do.	Jan. 22.		
William F. Short,	do.	18	80	. .	16	do.	Jan. 22.		
Royal Hosiery Mill,	do.	20	90	. .	19	do.	Jan. 23.		
Job Beatty's Sons,	Carpet yarns, etc.,	45	19	. .	8	do.	Jan. 23.		
James Beckman, Jr.,	Cotton and woolen goods,	15	40	. .	3	Fair.	Jan. 25.	Comply with sections 7 and 10,	Complied.
Cumberland Mills,	do. do.	15	25	. .	1	Good,	Jan. 25.		
Putnam Carpet Mills,	Carpets,	90	80	. .	12	do.	Jan, 26.	Provide automatic doors to each floor opening of elevator.	Complied.
Dyottville Glass Works,	Bottles,	125	. .	. .	20	do.	Jan. 26.		
Bergin & Sons,	do.	200	. .	. .	70	do.	Jan. 26.		
Clermont Knitting Mills,	Knit goods,	20	80	. .	4	do.	Jan. 27.		
Columbia Carpet Mills,	Carpets,	32	18	. .	. .	do.	Jan. 27.		
Centennial Carpet Mills,	Carpets, rugs, etc	125	25	. .	4	do.	Jan. 27.		

Wamsuta Mills	Cotton and woolen goods,	20	20			do.	Jan. 27.		
Feister Printing Company	Stamping and printing.	165	107		44	do.	Jan. 28.		
Goblin Tapestry Company	Tapestry and art squares,	2	16			do.	Jan. 28.		
Sheip & Co.,	Boxes,	190	60		16	do.	Jan. 28.		
John F. Lodge,	Carpet yarns.	44	12		4	do.	Jan. 29.		
Ziegler Bros.	Shoes,	310	250		16	do.	Jan. 29.		
Murray Flint Glass Works.	Globes and shades.	240	10		33	do.	Feb. 2.		
Allegheny Worsted Mills.	Worsted yarns.	38	38		16	do.	Feb. 2.		
Union Hosiery Mills,	Hosiery.	25	150		18	do.	Feb. 2.		
Tioga Mills,	Cotton hosiery yarns.	40	45		12	do.	Feb. 3.		
Joseph Black & Sons,	Hosiery,	10	120		50	do.	Feb. 3.		
Davenport Mills,	Turkish towels. etc.,	24	26			Fair,	Feb. 9.	Provide two additional water closets.	Complied.
Caledonia Mill No. 2.	Cotton and woolen yarns.	20	200		30	Good.	Feb. 9.		
Philadelphia Gimp Mills,	Gimps.	4	46		13	Fair.	Feb. 9.	Cleanse water closets.	Complied.
Caledonia Mill No. 1,	Carpets,	150	500		116	Good.	Feb. 9,	Comply with section 7.	Complied.
Continental Finishing Works,	Cotton and woolen goods,	16	16		3	Fair,		Repair water closets; new cable to elevator. and each floor opening to be provided with doors or gates,	Complied.
Jacob Miller, Sons & Co.	do. do.	8	55			Good.	Feb. 11.		
David Greer,	Cotton goods,	30	50		1	do.	Feb. 11.		
James Bryson,	do.	10	30			do.	Feb. 11,	Proper ventilation ordered.	Complied.
John C. Watt,	do.	30	60		1	do.	Feb. 11.		
Arlington Mills.	do.	20	40			do.	Feb. 12.		
Stewart Bros. & Co.	do.	5	60		1	do.	Feb. 12.		
John Williams Manufacturing Co.,	Cotton and woolen goods.	75	75		8	do.	Feb. 12.		
Leviathan Belting Company.	Belting.	5	25			do.	Feb. 12.	Comply with section 7.	Complied.
Caledonia Woolen Mill,	Cotton and woolen goods,	150	250		28	Fair.	Feb. 12	Comply with sections 7. 10 and 12.	Mill burned down.
Whittle & Leavers.	Hosiery,	20	40		13	Good,	Feb. 18,	Comply with section 1.	Complied.
John Sidebotham	Braids and tapes,	2	12		1	Bad.	Feb. 18.	Cleanse water closets.	Complied.
Langdell Mills,	Ginghams	50	150		14	Good,	Feb. 18,	Post notices.	Complied.

PHILADELPHIA—*Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of Inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Louis Weber.	Hosiery, ...	15	85	. .	27	Good.	Feb. 20, .	Comply with section 1, ...	Complied,
Thomas Buck & Co..	do	10	35	. .	3	do.	Feb 20, .	Comply with section 1, ...	Complied.
Cars, Stauffer & Co..	Biscuits, ...	16	9	. .	3	do.	Feb. 24, .	Comply with sections 2, 3 and 7, ...	Complied,
Haines, Jones, Cadbury & Co.. . .	Brass foundry, ...	175	25	. .	8	do.	Feb. 21, .	Comply with sections 2, 3 and 7, ...	Complied.
J. C. Graham & Co..	Upholstery goods	20	200	. .	33	do.	Feb. 24.		
James H. Kerr, ...	Cotton Goods, ...	52	30	. .	7	Bad,	Feb. 25. .	Comply with sections 2, 3, 10 and 12. . .	Complied.
L. C. Krisher.	Carpets, ...	100	25	. .	. . .	Good,	Feb. 26.		
David Jackson.	do.	51	26	. .	. . .	do.	Feb. 26.		
Henry Dickel & Son.	do.	20	30	. .	. . .	do	Feb 26.		
Phillip Doerr & Son, ...	do.	5	104	. .	. . .	do.	Feb, 27.		
Caterson Brotz & Co., ...	Cards, ...	4	18	. .	1	do.	Feb. 27.		
A M. Collins & Co., ...	Card board.	195	130	. .	45	do.	Feb. 27.		
Victoria Mills, ...	Carpets, ...	30	40	. .	2	do.	Mar. 4. .	Comply with section 1.	Complied.
Rock Carpet Mills, ...	Carpets and art squares. . . .	20	61	. .	2	do.	Mar. 5.		
Brown Bros. & Aberle Co	Fancy hosiery, ...	40	160	. .	48	do.	Mar. 5.		
Pennsylvania Worsted Mill, ...	Worsted yarns, ...	35	75	. .	18	do	Mar. 6.		
Oriental Mills, ...	Upholstery goods, ...	150	75	. .	17	do.	Mar. 6		
Barlow Mills, ...	do.	20	15	. .	5	do.	Mar. 6, .	Comply with sections 2, 3 and 7, ...	Complied.
J B Patterson, ...	Textile novelties, ...	15	25	. .	. . .	do.	Mar 10.		
J Sullivan & Sons, ...	Tapes and braids, ...	30	200	. .	1	do.	Mar. 11.		

Jos. P. Murphy,	Cotton and woolen goods,	250	400		45	do	Mar. 11,		
McNeely & Co.,	Morocco,	600			40	do	Mar 11.		
Ruddington Mills,	Hosiery,	36	96		12	do.	Mar. 12		
Robert Beatty,	Cotton yarns,	49	60		28	do.	Mar 12.		
A Schoenhut & Co.,	Novelties in wood,	51	3		24	do.	Mar 12.		
Samuel Read,	Shoes,	18	12			do	Mar. 12.		
Cameron & Zimmerman,	Upholstery goods,	17	21		6	do	Mar. 13.		
Boylston Mills,	Cotton and woolen goods,	40	75			do	Mar 13.		
Devon Carpet Mills,	Carpets,	30	10		2	do.	Mar. 13		
John Culbertson & Sons,	Cotton and woolen goods,	7	33		2	do	Mar. 13		
Pequa Mills,	do. do.	600	450		80	do	Mar 13		
George W. Brooke,	Turkish towels,	20	26		2	do	Mar 17		
Collingwood Mills,	Cotton and woolen goods,	270	260		86	do.	Mar. 17.	Comply with section 7,	Complied
Leapaul Mills,	Upholstery goods,	217	108		48	do	Mar. 17		
Empire Mills,	Cotton and woolen goods,	20	40		1	do.	Mar 23		
Ryer Mills,	Upholstery goods,	77	49		23	do.	Mar. 23.		
Providence Dye Works,	Dyeing and finishing goods.	290	35		20	do.	Mar. 23		
Joseph T. Smith & Co.,	Worsted yarns,	4	30		10	do.	Mar. 25.		
J Wesley Johnson,	Carpets,	9	11		2	do.	Mar 25.		
Belmont Carpet Mills,	do.	16	17	1	1	do	Mar. 25,	Dismiss one child under 12	Complied
C F. Fox,	Hosiery,	4	11		1	do	Mar. 26.		
Price & Vogt,	Hats,	14	12			do	Mar. 26.		
Nottingham Hosiery Mill,	Hosiery,	10	30		6	do.	Mar 26.		
American Hardware Company,	Novelties,	80			5	do	Mar. 27.		
A Boyle & Bro.,	Hosiery,	21	46		16	do	Mar. 27.		
Marlborough Mills,	Hosiery, jerseys, etc.,	67	90		10	do	Mar 26,	Place certificates on file and designate water closets.	Complied.
Matthew Murphy,	Tapes and bindings,	2	28		4	do.	Mar 31.		
John F. Lodge,	Carpet yarns,	45	14			do.	April 3,	Comply with sections 7 and 12.	Complied

PHILADELPHIA — *Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactnred	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance
		Males.	Females.	Under 12.	12 to 16.				
Bechman, Carnell & Co.,	Silk mohair and worsted plush.	8	20	. .	3	Good,	April 7.		
J M Schwehm,	Hair-cloth, etc.,	20	10	. .	2	do	April 7.		
Robert Foerderer.	Morocco dressing,	339	1	. .	40	do.	April 7, .	Comply with sections 2 and 3,	Complied
Falrmount Spinning Mills,	Wool merino and mixed yarns,	58	6	. .	14	do.	April 9.		
Keystone Mills,	Woolen and cotton goods.	35	50	. .	2	Fair,	April 9,	Comply with sections 10 and 12.	Complied.
John Forrest,	Printing warps and yarns,	30	10	. .	5	do.	April 10 .	Comply with section 10,	Complied
Keystone Mill.	Worsted yarns,	15	45	. .	6	do.	April 10, .	Comply with section 10,	Complied
John Galashan,	Cotton goods.	8	17	. .	1	Good,	April 10		
Thomas Dolan & Co.. Mills 3 and 4,	Spinning woolen yarns,	238	12	. .	69	do	May 7.		
Sanquvit Manufacturing Company.	Yarns and silk goods.	65	275	. .	35	do.	May 7.		
Falrmount Worsted Mills.	Worsted yarns.	34	253	. .	66	do.	May 5.		
William B. Hackenburg & Co.,	Sewing silk.	13	97	. .	2	do.	May 5.		
Oxford Hosiery Mill.	Hosiery.	50	150	. .	14	do	May 11, .	Box belt and change square head screen in winding frame	Complied.
James Long, Bro. & Co..	Cotton goods	83	92	. .	12	do	May 11.		
Park Mills,	do.	40	120	. .	20	Fair	May 11. .	Comply with sections 10 and 12,	Complied.
Park Carpet Mills.	Carpets	75	200	. .	47	Good,	May 11. .	Comply with sections 7 and 12,	Complied.
Robert Lewis.	Upholstery goods.	18	17	. .	3	do.	May 12		
Isaac Lockhart	Carpets.	12	14	. .	1	do	May 12		
T. A. Bochman & Co..	Cotton and woolen goods,	75	125	. .	8	do	May 12		

Rowland & Schmidt.	Carpets,	300	100	..	18	do.	May 12.		
Estate of Joseph Barnhurst,	Umbrella frames,	65	40	..	40	do.	May 13.		
Tioga Mills.	Hosiery yarns.	26	15	..	5	do.	May 14.		
Tioga Hosiery Mills,	do.	15	135	..	35	do.	May 14.		
The Schlichter Jute and Cordage Company.	Rope. etc.,	180	200	..	65	do.	May 14.		
Utility Mills,	Chenille curtains.	25	21	..	10	do.	May 15.		
Clifton Mills,	Worsted goods,	60	30	..	...	do.	May 15.		
Westphalia Mills,	Upholstery goods.	43	21	.	1	do.	May 15, .	Box in drive belt and place bars across hoist doors.	Complied.
Ormiston Knitting Mills,	Knit goods.	50	200	..	27	do.	May 19.		
Blair, Hamilton & Russell,	Chenille curtains,	43	21	..	6	do.	May 19.		
Whittle & Leavers,	Hosiery,	20	30	..	10	do.	May 20.		
Allegheny Worsted Mills,	Worsted yarns,	35	35	..	21	do.	May 20.		
A. J. Reach & Co.,	Base balls,	95	30	..	41	do.	May 21, .	Comply with section 7,	Complied.
John Sullivan & Sons,	Braids and tapes,	116	114	..	12	do.	May 22.		

GERMANTOWN, PHILADELPHIA.

Germantown Hosiery Mills,	Hosiery.	100	200	..	23	Good,	Dec. 3.		
J. & B. Allen,	Fancy knit goods,	120	300	..	...	do.	Dec. 3.		
B. Hamill & Co.,	Woolen and worsted yarns,	55	7	..	10	do.	Dec. 3.		
Jos. Schatchard's Sons,	Woolen and merino,	90	2	..	40	do.	Dec. 3.		
Hinckley Mills,	Hosiery,	156	104	..	3	do.	Dec. 4.		
Wingohocking Mills,	Hosiery and jackets,	230	210	..	44	do.	Dec. 4.		
Standard Hosiery Mill,	Hosiery,	30	80	..	9	do.	Dec. 4.		
Glenmore Worsted Mill,	Worsted yarns,	85	125	..	78	do.	Dec. 10.		
Industrial Knitting Mill,	Hosiery,	40	40	..	10	do.	Dec. 11.		
Shirland Mills,	Cardigan jackets,	22	10	..	...	do.	Dec. 11.		

GERMANTOWN—*Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Greaves & Thurman,	Gloves and mittens,	30	10	. .	2	Good,	Dec. 11.		
Moses Dalzell,	Hosiery,	18	20	. .	. . .	do.	Dec. 11.		
Harvick Knitting Mills,	do.	35	45	. .	4	do.	Dec. 11.		
John S. Palmer & Son,	do.	17	26	. .	2	do.	Dec. 11.		
T. W. Fling,	do.	7	12	. .	. . .	do.	Dec. 12.		
Germantown Knitting Mills,	do.	10	60	. .	13	do.	Mar. 31.		
Standard Knitting Mills,	do.	51	27	. .	4	do.	Mar. 31.		
Standard Hosiery Mills,	do.	58	90	. .	6	do.	April 1,	Comply with section 1.	Complied
West & Taylor,	do.	12	18	. .	2	do.	April 1.	Comply with section 1.	Complied
Thomas W. Fling & Bro.,	do.	10	16	. .	1	do.	May 20.		
Chas. Chipman & Son,	do.	50	100	. .	30	do.	May 20.		
John S. Palmer & Son,	do.	6	24	. .	4	do.	May 21.		
Jos. Fling,	Cotton, woolen and merino yarns,	31	9	. .	9	do.	May 21.		

BRIDESBURG, PHILADELPHIA.

E. H. Fitler & Co.,	Rope, etc.,	445	115	. .	50	Good.	Dec. 19.		

BRISTOL, BUCKS COUNTY.

Bristol Carpet Mills,	Carpets. rugs. etc.,	330	250	..	33	Good,	Dec.	18,	Comply with sections 2, 3 and 7.	Complied.
Bristol Worsted Mills,	Worsted yarns,	90	180	..	76	do.	Dec.	18.		
Star Seamless Hosiery Mills,	Hosiery,	14	35	..	21	do.	Dec.	18,	Comply with sections 2. 3 and 18.	Clos'd business.
Wilson & Fenimore.	Paper hangings,	70	2	..	43	do.	Dec.	19.		
Bristol Hosiery Mill,	Hosiery,	150	250	..	65	do.	Dec.	19.		
Providence Hosiery Mill,	do.	80	80	..	30	do.	Dec.	19.		

MANAYUNK, PHILADELPHIA.

Wm. Holt & Son,	Carpets and woolen goods,	150	100	..	30	Good,	Jan.	7,	Comply with sections 2, 3 and 12.	Complied.
Little Falls Mill,	Yarns and blankets,	38	12	..	2	do.	Jan.	7.		
Star Woolen Mills,	Blankets and flannels,	63	27	..	...	do.	Jan.	7.		
Robert Wildeson,	Woolen yarns,	34	12	..	...	do.	Jan.	7.		
Ripka Mills,	Dress goods.	37	70	..	11	do.	Jan.	14.		
Missouri Mills,	Blankets and carpet yarns.	23	12	..	3	Fair,	Jan.	14.	Cleanse water closets and comply with section 7.	Complied
Eagle Mills,	Cotton and woolen goods.	45	180	..	20	Good,	Jan.	14.		
Martin and W. H. Nixon Paper Co.,	Paper,	162	86	..	...	do.	Jan.	15.		
Standard Mills,	Cotton and woolen goods,	30	30	..	1	do.	Jan.	15,	Erect fire escape.	
Arkwright Mills,	Silk and cotton goods	42	38	..	1	do.	Jan.	15,		
Pekin Mills,	Cotton and woolen goods,	73	62	..	9	do.	Jan.	15,	Comply with sections 2, 3, 7 and 12,	Complied.
Victoria Mills,	Cotton goods,	50	40	..	8	do.	Jan.	15.	Comply with sections 2, 3 and 12,	Complied.
East Economy Mills,	Worsted yarns,	50	250	..	87	Fair,	Feb.	3,	Comply with sections 3. 7 and 10,	Complied.
Progress Mills,	Blankets,	100	50	..	1	Good,	Feb.	3.		
Wm Holt & Son,	Cotton. woolen and merino yarns,	59	6	..	14	do.	Feb.	4.		

MANAYUNK — *Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given	Compliance.
		Male.	Females.	Under 12.	12 to 16.				
Platt & Bro..	Cotton and woolen yarns, . .	85	15	. .	9	Good,	Feb. 4.		
Baker, Holt & Co., ...	Plushes, ...	3	20	. .	3	do.	Feb. 4.		
Harmony Mills, ...	Cotton and woolen yarns. . .	38	2	. .	10	do.	Feb. 4,	Comply with sections 2, 3 and 18, ...	Complied.
Joseph M. Adams, ...	Carpet and backing yarn, . .	64	21	. .	. . .	Bad, .	Mar. 10,	Cleanse and repair water closets, ...	Complied.
Albert Crankshaw, ...	Cotton and woolen goods, . .	71	175	. .	4	Good,	Mar. 20.		
The A. Campbell Manufacturing Co..	Cotton yarns.	46	160	. .	70	do.	Mar. 20.		
Picton Mills, ...	Cotton and woolen goods, . .	62	63	. .	12	do.	Mar. 20,	Comply with sections 7 and 12, ...	Complied.
John & James Dobson.	Worsted yarn spinning. . . .	150	200	. .	106	do.	April 13.	Guard the gears of the gill box, ...	Complied.
Crompton.	Plush goods, ...	35	35	. .	1	Fair,	April 13.	Cleanse and ventilate water closets, repair stairway and platform and place hand rails thereon.	Complied.
Wabash Mills.	Cotton goods, ...	34	9	. .	4	Good,	April 13.		
W. E. Loudon & Co., ...	Upholstery goods, ...	10	40	. .	9	do.	April 20.		
E. H. Morris.	Carpet yarns, ...	33	9	. .	2	do.	April 24.		
T. Kenworthy & Bro., ...	do.	35	69	. .	54	do.	April 24,	Comply with sections 9 and 12, ...	Complied.

FRANKFORD, PHILADELPHIA.

Chas. Crankshaw, ...	Woolen goods.	18	10	. .	. . .	Good,	Feb. 18.		
Frogmore Mills, ...	Cotton yarns.	50	30	. .	11	do.	Feb. 18.		

Ralto Mills,	Hosiery,	4	30	..	8	do.	Feb. 18,	Comply with sections 2 and 3,	Complied.
Frankford Hosiery Mill,	do.	65	225	..	52	do.	Feb. 19.		
S. W. Evans & Son,	Brass works,	160	86	..	63	do	Feb. 19.		
Chas. H. Wilson's Sons.	Dyeing and finishing,	60	....	..	10	do.	Feb. 19.		
Samuel J. Campbell,	Cotton and woolen goods,	182	18	..	...	do.	Feb. 19.		
Aramingo Mills,	do. do.	80	70	..	18	do.	Feb. 20.		
Fremont Mills,	Carpets, cotton and woolen goods,	70	123	..	35	do.	Feb. 20.		
Eastlake Manufacturing Company,	Furniture gimp,	6	24	..	8	do.	Feb. 25,	Comply with sections 2 and 3,	Complied.
Caldwell, Antrim & Co.,	Umbrellas, etc.,	10	25	..	...	do.	Feb. 25.		
Wingohocking Mills.	Cotton yarns,	40	100	..	31	do.	Feb 25.		
Malcolm Mills Company.	Fancy yarns,	14	30	..	2	do.	Feb. 25.		

NORRISTOWN, MONTGOMERY COUNTY.

Norristown Woolen Mill.	Woolen goods,	100	100	..	18	Good,	Dec. 24.		
W. K. Gresh & Son.	Cigars,	75	50	..	10	do.	Dec. 24.		
Washington Woolen Mill.	Woolen goods,	44	46	..	13	do.	Dec. 24.		
Agenoria Mills,	C. W. & merino yarns.	50	50	..	4	do.	Dec. 24.	Comply with sections 2, 3 and 18,	Complied.
Roop & Yost,	Hosiery,	10	50	..	13	do.	April 14.		
A. B. Tyson & Bro.,	Shirts,	4	46	..	1	do.	April 14.		

PHŒNIXVILLE, CHESTER COUNTY.

Phœnix Hosiery Mill,	Hosiery,	5	60	..	8	Good,	April 21,	Comply with sections 2 and 3,	Complied.
Byrne, Parson & Co.,	do.	5	70	..	9	do.	April 21.	Comply with sections 2 and 3,	Complied.
Balmoral Patch Needle Company.	B. P. Needle Company.	5	16	..	...	do.	April 21.		
Spring City Glass Works.	Bottles and vials.	75	....	2	20	do.	April 20.	Comply with sections 2 and 3,	Complied.
American Wood Paper Company.	Paper,	125	16	..	6	do.	April 20.		

CHESTER, DELAWARE COUNTY.

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Aberfoyle Manufacturing Company,	Fine textile fabrics.	131	90	. .	14	Good,	Dec. 22,	Comply with sections 1 and 2.	Complied.
Chester Dock Mills, ...	Cotton goods, ...	89	186	. .	27	do.	Dec. 22.		
Springfield Worsted Mills, ...	Worsted yarns, ...	75	100	. .	60	do.	Dec. 22.		
Patterson Mills Company, ...	Cotton goods, ...	135	225	. .	35	do.	Dec. 22.		
Byram Manufacturing Company, .	Cotton and woolen goods. . .	46	20	. .	9	do.	May 6.		
George C. Hetzel & Co., ...	Woolen goods, ...	95	225	. .	22	do.	May 6,	Comply with sections 7 and 12.	Complied.
Chester Dock Mills.	Cotton goods, ...	65	175	. .	18	do.	May 8.		
Aberfoyle Manufacturing Company,	do. do.	90	150	1	20	do.	May 8.	Dismiss one child under 12 years.	Complied.
Shaw, Esery & Co., ...	Woolen goods, ...	110	158	. .	29	do.	May 8,	Guard cog wheels of the garnet machine,	Complied.
Centennial Mills, ...	Cotton spinning, ...	8	37	. .	17	do.	May 8,	Repair steps leading to the mill also stairway.	Complied.

DARBY, DELAWARE COUNTY.

Griswold Worsted Company, ...	Silk and worsted yarns, . . .	180	300	. .	154	Good,	Mar. 18.		
Imperial Mills.	Woolen and cotton goods, . .	70	70	. .	21	do.	Mar. 18.		

Eddystone, Delaware County.

Eddystone Print Works	Printing and finishing goods.	600	100	..	114	Good.	Dec. 22,	Comply with sections 1, 3 and 18.	Complied.
Eddystone Manufacturing Co.	Dyeing and finishing.	425	75	..	113	do.	May 8.		

Trainor, Delaware County.

D Trainor Manufacturing Co.	Cotton yarn spinning.	24	54	..	14	Good.	May 6.	Box four belts to the height of 4 feet, 6 inches and place guard rail around connecting rod in engine room.	

Bridgeport, Montgomery County

James Lees & Sons, Mill No. 6	Worsted yarn spinning.	48	108	..	55	Bad.	April 15.	Cleanse and ventilate water closets and place windows in tower to light the same.	Complied.
James Lees & Sons, Mill No. 4.	do. do.	50	100	..	66	Good.	April 15.	Place gate at the elevator openings between Nos. 2 and 4 mill.	Complied
James Lees & Sons, Mill No. 3.	do. do.	61	106	1	70	Fair.	April 15.	Repair and designate water closets.	Complied.
James Lees & Sons, Mill No 2.	Woolen yarn and weaving.	22	54	..	26	Good.	April 15.		
James Lees & Sons Mill No. 1.	Woolen cloth mill.	90	130	..	12	do.	April 15.	Comply with section 2.	Complied.

Royersford, Montgomery County.

Royersford Glass Works.	Bottles and vials.	120	....	..	33	Good.	April 17.	Comply with sections 2, 3 and 18.	Complied.
Diamond Glass Works.	do. do.	170	....	..	45	do.	April 17.	Comply with sections 2, 3 and 18.	Complied.
Enterprise Hosiery Company.	Hosiery and underwear.	10	30	..	12	do.	April 17.	Comply with sections 2, 3 and 12.	Complied.
Tremont Hosiery Mill.	Hosiery.	10	15	..	7	do.	April 17.	Comply with sections 2 and 3.	Complied.
American Mills.	do	5	45	..	20	do.	April 17.	Comply with sections 2 and 3.	Complied.
Royersford Hosiery Mill.	do.	20	35	..	16	do.	April 20.	Alter windows to lower for better ventilation.	Complied.
Royersford Hosiery Mill.	do.	23	30	..	8	do.	Dec. 31.	Comply with sections 2, 3 and 18.	

CONSHOHOCKEN, MONTGOMERY COUNTY.

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Schuylkill Woolen Mills.	Cotton goods, ...	35	45	. .	25	Good,	Dec. 31.		
Cottonade Mills, ...	do. do.	45	80	. .	25	do.	Dec. 31.		
Riverside Mills, ...	do. do.	20	40	. .	6	do.	Dec. 31.		
J. F. Garner, ...	Turkish towels, ...	4	12	. .	. . .	do.	Dec. 31.		
Ellwood, Lee & Co., ...	Surgical instruments. . . .	22	66	. .	. . .	do.	Mar. 19.		
Gulf Mills, ...	Cotton and worsted yarns. . .	71	59	. .	24	do.	Mar. 19.		
Conshohocken Woolen Company. .	Woolen goods, ...	115	115	. .	50	do.	Mar. 19.		
Marion Worsted Mills, ...	Worsted yarns.	80	50	. .	27	do.	Mar. 19.		

POTTSTOWN, MONTGOMERY COUNTY.

Norristown Hosiery Company. . . .	Hosiery, ...	2	47	. .	25	Good,	Dec. 30.		
Thomas Cole, ...	Cigars, ...	3	10	. .	. . .	do.	Dec. 30.		
Batchelor Bros., ...	do.	32	76	. .	20	do.	Dec. 30,	Comply with sections 2, 3 and 18.	Complied.

PHILADELPHIA.

B C. Kretchman	Printing	10	4	..	12	Good,	Dec. 1.		
Mercantile Printing Company	do.	12	5	..	5	do	Dec. 1.		
Stewart & Eayer	Blank books	10	6	..	4	do.	Dec. 1.		
Paxon & Comfort	Trimmings	37	13	..	4	do.	Dec. 2.	Erect fire escape	Complied.
Brenker & Kenler	Lithographers	44	2	..	16	do.	Dec. 2.		
Wanamaker & Brown	Clothing	375	25	..	15	do.	Dec. 4.	Erect fire escape	
Philadelphia Cloak and Suit Co.	Cloaks and suits	90	60	..	...	do.	Dec. 4.	Box one shaft and erect fire escape.	Complied.
Granville B Haines	Dry goods	300	600	5	100	do.	Dec. 5.	Dismiss three children under 12 years, box two shafts and erect two fire escapes.	Complied.
T. J. Dunn & Co.	Cigars	290	60	..	...	Poor.	Dec. 8.	Disinfect and designate water closets.	Complied.
Baptist Publication Society	Periodicals	30	80	..	...	Good.	Dec. 9.	Place bell in engine room.	Complied.
Llewellyn & Co.	Laboratory	6	14	..	4	do.	Dec. 10.		
Presbyterian Board of Publication	Periodicals	40	10	..	...	do.	Dec. 11.		
National Watch Case Company	Watch cases	29	6	..	8	do.	Dec. 12.		
Kaufman & Rubin	Ladies' underwear	10	100	..	6	do.	Dec. 12.		
Burk & McFetridge	Blank books	94	4	..	12	do.	Dec. 29.		
Henry B Ashmead	Printing	33	12	..	7	do.	Dec. 29.		
Robert O Moorehouse	Paper	55	40	..	8	do.	Dec. 29.		
William H. Hoskins	Stationery	61	47	..	...	do.	Dec. 29.		
Stanley G. Flagg & Co.	Iron works	280	....	..	14	do.	Dec. 30.		
Follmer, Clogg & Co.	Parasols	80	480	..	18	do.	Dec. 30.		
J W. Collins	Printing	33	12	..	11	do.	Dec. 31.		
Keystone Skirt Company	Ladies' skirts	52	98	..	1	do.	Dec. 31.		
Leader Publishing Company	Printing	6	10	..	3	do.	Jan. 2.		
Frederick Shields	Oxford bindery	35	80	..	6	do.	Jan. 2.		
J Koernke	Cloaks	3	17	..	3	do.	Jan. 3.		
Jos Potter	Straw works	10	150	..	16	do.	Jan. 3.	Erect fire escape.	Complied.
H Bernstein	Trimmings	10	25	..	6	Poor.	Jan. 5.	Comply with sections 1, 9, 18 and 10.	Complied.

PHILADELPHIA—*Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Hays-Partridge Shoe Company, . .	Shoes, ...	70	80	3	19	Good,	Jan. 5, .	Comply with sections 1, 8, 9, 12 and 18. . .	Complied.
John Mundel & Co., ...	do.	300	300	9	150	do.	Jan. 6. .	Comply with sections 1, 9, 8, and dismiss nine children under twelve years.	Complied.
Lewis H. Blumhard, ...	Printing, ...	11	7	. .	3	do.	Jan. 6.		
Chambers & Goodman, ...	Blank books, ...	9	6	. .	4	do.	Jan. 6.		
Dando Printing Company, ...	Printing, ...	10	8	. .	3	do.	Jan. 7.		
Dunlap & Clarke, ...	do.	30	30	. .	22	do.	Jan. 7.		
Falcon Hoisery Mills, ...	Hosiery, ...	20	60	.	24	do.	Jan. 8.		
Evans Printing House, ...	Printing, ...	16	12	. .	6	do.	Jan. 8		
Barnes Lanndry, ...	Lanndry, ...	10	70	. .	17	do.	Jan. 9.		
Lewis Eshner & Bro., ...	Men's neckwear, ...	80	220	. .	. . .	do.	Jan. 9,	Comply with sections 1, 9 and 18, ...	Complied.
Langfeld Bros., ...	Leather goods, ...	240	140	. .	7	do.	Jan. 9, .	Comply with sections 9 and 18, ...	Complied.
Troy Laundry, ...	Laundry, ...	15	45	. .	. . .	do.	Jan. 10.		
Richard J. Lennon, ...	Clothing, ...	20	100	. .	22	do.	Jan. 10.		
Wells Manufacturing Company, . .	Wire springs, ...	28	12	. .	4	do.	Jan. 12.		
Nonpariel Laundry, ...	Laundry, ...	6	45	. .	. . .	do.	Jan 12.		
Forrest Laundry, ...	do.	9	34	. .	2	do.	Jan. 12.		
John Wanamaker, ...	Dry goods, ...	2,000	2,300	. .	500	do.	Jan. 13, .	Post notices, ...	Complied.
D. & J. Noblitt, ...	Notions, ...	38	12	. .	7	do.	Jan. 13.		
R. J Lennon, ...	Children's clothing, ...	50	110	. .	22	do.	Jan. 13.		
Hirsh & Bro., ...	Parasols, ...	250	400	. .	200	do.	Jan. 14, .	Post notices, ...	Complied.

J. B. Agnew,	Furs	23	15	1	do.	Jan. 14.		
Perkins & Co.,	Dry goods,	35	15	7	do.	Jan. 14.		
Boyd, White & Co.,	Carpets,	127	23	7	do.	Jan. 14.	Post notices,	Complied.
Blum Bros.,	Cloaks,	150	50		do.	Jan. 15.		
Banner Laundry,	Laundry.	1	17		do.	Jan. 15.	Post notices,	Complied.
L. D. Leberman,	Cigars,	13	12		do.	Jan. 15.	Post notices.	Complied.
John Mustin,	Notions,	15	20	3	do.	Jan. 15.	Post notices and report all accidents,	Complied.
Expert Laundry,	Laundry,	3	15		do.	Jan. 16.		
Robert Noble.	Notions,	7	9	5	do.	Jan. 16.		
Darlington & Runk,	Dry goods,	150	750	150	do.	Jan. 16.	Post notices and report all accidents.	Complied
Singer Manufacturing Company,	Sewing machines,	48	12	1	do.	Jan. 16.		
Eshleman & Craig.	Shirts,	7	53	8	do.	Jan. 19.		
B. F. Dewees,	Dry goods,	30	50	8	do.	Jan. 19.		
E. A. Wright,	Printing,	30	90	22	do.	Jan. 19.		
Rothschild & Co..	Children's clothing.	8	30		do.	Jan. 19.		
J. B. Agnew,	Furs,	75	75	15	do.	Jan. 20.		
Boyle & Bodin,	Neckwear.	14	6	5	do.	Jan. 20.		
G. W. Miles,	Millinery,	7	43	7	do.	Jan. 20.		
Hallahan Bros.,	Shoes,	30	5	6	do.	Jan. 20.		
H. Varwig & Co.,	Plush cases,	17	18	7	do.	Jan. 21.		
Porter & Coates.	Stationery,	37	3	15	do.	Jan. 21.		
Jno. F. Orne,	Carpets,	55	15		do.	Jan. 21.		
Caldwell & Co.,	Jewelry,	120		15	do.	Jan. 21.		
Jacob Reed's Sons,	Clothing.	335	15	22	do.	Jan. 21.	Comply with sections 9 and 12,	Complied.
S. M. Wanamaker,	do.	500	50	18	do.	Jan. 22.	Comply with sections 9 and 12.	Complied.
Blaylock & Blynn,	Hats,	12	9		do.	Jan. 22.		
Bowker & Swain.	Neckwear,	20	15		do.	Jan. 22.		
E. G. Whitman.	Chocolates.	13	6	5	do.	Jan. 22.		
George Allen.	Millinery,	15	43	12	do.	Jan. 23.		

PHILADELPHIA—*Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
William M. Hoskins,	Stationery,	75	40	. .	. . .	Good,	Jan. 23.		
Hillier & Co.,	Shirts,	8	30	. .	. . .	do.	Jan. 23.		
McCallum & Sloan,	Carpets,	130	35	. .	3	do.	Jan. 23.		
T. Lallor & Co.,	Dry goods,	35	15	. .	13	do.	Jan. 26.		
G. A. Swartz,	Toys,	15	15	. .	4	do.	Jan. 26.		
J. B. Sheppard,	Dry goods,	60	60	. .	1	do.	Jan. 26.		
John & James Dobson,	Carpets,	60	15	. .	1	do.	Jan. 27.	Comply with sections 9 and 18,	Complied.
Miles Bros.,	Shoes,	60	20	. .	5	do.	Jan. 27.		
G. Allen,	Millinery,	5	45	. .	13	do.	Jan. 27.		
Sharpless Bros.,	Dry goods,	150	250	. .	50	do.	Jan. 28,	Erect fire escape,	Complied.
Homer & Le Boutillier,	do.	75	225	. .	28	do.	Jan. 28.		
King & Bryson,	Printers,	10	7	. .	4	do.	Jan. 28.		
Fred. W. Thomas,	do.	9	7	. .	5	do.	Jan. 29.		
C. F. Stuetzer,	do.	12	6	. .	6	do.	Jan. 29.		
Charles Ulrich,	do.	10	5	. .	7	do.	Jan. 29.		
Magee Print House,	do.	24	14	. .	5	do.	Jan. 30.		
D. Morse,	Baking company,	10	15	. .	. . .	do.	Jan. 30.		
Ivins, Deitz & McGee,	Carpets,	20	289	. .	14	do.	Jan. 30.		
Turner & Harrison,	Steel pens,	10	40	. .	. . .	do.	Feb. 2,	Comply with sections 9, 12 and 18,	Complied
Original Family Laundry,	Laundry,	4	19	. .	. . .	do.	Feb. 2,	Comply with sections 9, 12 and 18,	Complied.

Richard J. Winman,	Chemist,	12	7	5	do.	Feb.	2.
Chas. L. Mitchell,	Laboratory,	12	8	5	do.	Feb.	2.
H. C. Alexander,	Cloaks,	4	10	1	do.	Feb.	3.
Wm. Cox,	do.	2	10		do.	Feb.	3.
Isaac Dreifus,	do.	7	10	3	do.	Feb.	3.
Louis Geisenberger,	Shirts,	2	18	1	do.	Feb.	3.
Ben Lenderman,	Clothing,	4	12	1	do.	Feb.	3.
Mausbach & Swartz,	Shirts,	4	18	1	do.	Feb.	9.
J. C. Myers,	Cloaks and dresses,	5	20	6	do.	Feb.	9.
E. Reuble & Co.,	Cloaks,	2	12	2	do.	Feb.	9.
Daniel Bateman,	Laundry,	3	13	4	do.	Feb.	10.
Ellen Chase,	do,	1	12		do.	Feb.	10.
Jas. C. Curdy,	do.	2	14		do.	Feb.	10.
Lewis & Wood,	Blank books,	2	15		do.	Feb.	11.
Jos. Schuman,	do.	8	9	3	do.	Feb.	11.
Ward & Barnitz,	Printing,	8	6	4	do.	Feb.	11.
A. Becket,	Cigars,	10	10	4	do.	Feb.	12.
Henry Nuss,	Shirts,	3	9	1	do.	Feb.	12.
Newton R. Dewees,	Blank books,	7	7	4	do.	Feb.	13.
Samuel Nathan,	Soap,	6	8	3	do.	Feb.	13.
Novelty Paper Box Company,	Paper boxes,	2	26	5	do.	Feb.	16.
Thomas W. Price,	Stationery,	10	20	3	do.	Feb.	16.
John R. Morris,	Patent medicines,	12	16	8	do.	Feb.	16.
J. M. Goldy & Sons,	Blank books,	8	6	5	do.	Feb.	17.
J. M. Hensel & Sons,	do.	13	7	4	do.	Feb.	17.
King & Bryson,	do.	9	7	4	do.	Feb.	17.
Sunshine Publishing House,	Publishing house,	8	12	5	do.	Feb.	17.
Stephen Winslow,	Blank books,	10	6	5	do.	Feb.	18.
B. F. Cornish,	Horse clothing,	8	12	1	do.	Feb.	18.

PHILADELPHIA—*Continued.*

NAME OF FACTORY OR WORKSHOP	Goods Manufactured	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given,	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
A. Davison,	Soaps,	8	20	. .	9	Good,	Feb. 18.		
F. Morris,	Suspenders,	4	16	. .	1	do.	Feb. 19.		
W. F. Kopp,	Clothing,	7	15	. .	4	do.	Feb. 19.		
Adolph Newman,	Parasols,	4	16	. .	4	do.	Feb. 20.		
Snelienburg & Co.,	Clothing,	375	25	. .	28	do.	Feb. 20,	Post notices,	Complied.
F. W. Klinger,	Leather goods,	50	30	. .	8	Bad,	Feb. 20.	Comply with sections 10, 12 and 18,	Complied.
Wm. D. Munier,	Neckwear,	20	60	. .	15	Good,	Feb. 23,	Comply with section 18,	Complied.
F. W. Wolf & Co.,	Parasols,	10	20	. .	1	do.	Feb. 23.		
Boltz & Clymer,	Cigars,	350	200	3	25	do.	Feb. 24.	Comply with section 18 and dismiss three children under twelve years.	Complied.
Hexter Bros.,	Clothing,	22	18	. .	5	do.	Feb. 24,	Comply with section 18; also guard windows.	Complied.
C. R. Cleveland,	Laundry,	2	10	. .	3	do.	Feb. 25.		
C. W. Darrington,	do	2	12	. .	1	do.	Feb. 25.		
W. F. Duncan,	Dress trimmings,	6	14	. .	5	do.	Feb. 26,		
J. & B. Allen,	Yarns,	80	120	. .	33	do.	Feb. 26.		
George Zeisel,	Jewelry,	20	8	. .	6	do.	Feb. 27.		
Cooper & Schoiten,	Woolen goods,	30	50	. .	14	do.	Feb. 27.		
Craig Bros.,	Laundry,	3	15	. .	5	do.	Mar. 4.		
Henry Fleishman,	do.	3	12	. .	4	do.	Mar. 4.		
Julius Rosenbaum,	Leather goods,	20	8	. .	5	do.	Mar. 5.		

David Mandel,	Linen goods.	20	18	8	do.	Mar. 5.		
R. E. Bender.	Braiding works.	4	116	17	do.	Mar. 6.	Comply with section 18.	Complied.
Fleck & Dull,	Yarns,	200	80	35	do.	Mar. 6.		
Consolidated Manufacturing Company.	Brushes,	8	8	6	do.	Mar. 6.		
Troy Laundry.	Laundry,	22	61		do.	Mar. 9.	Comply with sections 9 and 18.	Complied.
A. J. Holman & Co..	Bibles,	125	275	40	do.	Mar. 9,	Comply with sections 9 and 18.	Complied.
Laird, Shober & Mitchell,	Shoes,	355	320	35	do.	Mar. 9,	Comply with sections 9 and 18.	Complied.
A. J. Elsey,	Artificial flowers.	2	38	9	do.	Mar. 10.	Erect fire escape, post notices and designate water closets.	Complied.
H. Frank,	Cloaks,	12	10		do.	Mar. 10.	Post notices and designate water closets.	Complied.
L. Dannenbaum & Co.	Notions.	34	6	5	do.	Mar. 10.		
Marks Bros..	Dry goods,	225	475	37	do.	Mar. 11,	Post notices,	Complied.
Adolph Heller,	do.	70	230	25	do.	Mar. 11.	Post notices.	Complied.
J. & L. Baxter,	Artificial flowers.	15	135	18	do.	Mar. 11.		
J. N. Custer.	Millinery,	32	28		do.	Mar. 12.		
H. Heller.	Ladies' underwear.	30	230	28	do.	Mar. 12,	Post all notices pertaining to the act.	Complied.
Langfeld Bros.	Leather goods.	220	230	7	do.	Mar. 13,	Post all notices pertaining to the act.	Complied.
Bowen, Dungan & Co.,	Millinery.	23	10	4	do.	Mar. 16,	Post all notices pertaining to the act,	Complied.
Kaufman & Ruben.	Ladies' underwear.	5	120	6	do.	Mar. 16,	Post all notices pertaining to the act.	Complied.
George Harris & Sons,	Printing,	95	290	38	do.	Mar. 16,	Post all notices pertaining to the act,	Complied.
Strunk & Vanzant,	Artificial flowers.	2	18	6	do.	Mar. 17.		
Wolfe & Co.,	Card printing.	20	60	25	do.	Mar. 17.		
Mrs. A. J. Parker,	Straw works.	10	50		Fair.	Mar. 17.	Comply with sections 9, 12, 18 and 10.	Complied.
Pennsylvania Cloak Company.	Cloaks.	42	38		Good,	Mar. 18.		
Mindel & Co..	Infants' cloaks.	5	75		do.	Mar. 18.		
J. W. Calver.	Hat frames.	8	27		do.	Mar. 18.		
National Metal Edge Box Company,	Paper boxes,	30	30	3	do.	Mar. 19.	Post all notices pertaining to the act and provide means of communication with engine room.	Complied.
Schoenke.	Laboratory.	43	15		do.	Mar. 19.		

PHILADELPHIA — *Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
L. C. Hall,	Silk knit goods,	30	150	. .	33	Good,	Mar. 19.		
Paxton, Comfort & Co.,	Funeral supplies,	37	13	. .	4	do.	Mar. 20.		
Oxford Bindery,	Printing,	35	80	. .	6	do.	Mar. 20,	Post all notices pertaining to the act, . .	Complied.
F. W. Maurer's Sons,	Trimmings,	25	250	. .	25	do.	Mar. 20,	Post all notices pertaining to the act, . .	Complied.
Forbes Publishing Company,	Printing,	25	150	. .	29	do.	Mar. 21.		
Joseph Potter,	Straw works,	10	150	. .	20	do.	Mar. 21,	Post all notices pertaining to the act, . .	Complied.
Lebenan & Bolton,	Lithographers,	16	12	. .	5	do.	Mar. 21.		
Collins & Co.,	Notions,	4	16	. .	8	do.	Mar. 23.		
Morreli Bros.,	Printing,	40	40	. .	23	do.	Mar. 23.		
J. F. Nace,	Perfumes,	7	7	. .	3	do.	Mar. 23.		
William B. Riley,	Horse clothing,	20	60	. .	18	do.	Mar. 24.		
Curtis Publishing Company,	Ladies' Home Journal,	50	156	. .	12	do.	Mar. 30.		
Weil Bros.,	Shirts,	10	40	. .	. . .	do.	Mar. 31.		
M. Elkin & Co.,	Shoes,	100	50	. .	7	Fair,	April 1,	Comply with sections 9, 10 and 18. . . .	Complied.
Mrs. A. C. Baur,	Artificial flowers,	1	19	. .	4	Good,	April 2.	Post all notices pertaining to the act, . .	Complied.
Solomon Bros.,	Shoes,	3	42	. .	17	do.	April 2,	Comply with sections 7, 9, 12 and 18, . . .	Complied.
Ketterlinus & Co.,	Printing,	25	60	. .	15	do.	April 2.		
Young & Keim,	Paper boxes,	5	21	. .	6	do.	April 3,	Comply with sections 9, 7 and 18, ...	Complied.
W. G. Ellis,	Hosiery,	15	135	. .	22	Fair,	April 3,	Erect fire escape, box three shafts, designate water closets and post notices.	Complied.

Saller, Lewin & Co.,	Shoes,	350	150	70	do.	April 3,	Box five shafts, designate water closets, post notices and provide means of communication with engine room.	Complied.
Franklin Printing Company,	Printing,	61	9	2	do.	April 6,	Comply with section 10 and post notices,	Complied.
Pennsylvania Shoe Company,	Shoes,	27	16		Good,	April 6.	Box cleaning machine, designate water closets and screen the same, and post notices.	Complied.
James Arnold.	Book bindery,	25	15	10	do.	April 6,	Designate water closets and post notices,	Complied.
Ziegler Bros.,	Shoes,	250	200	14	do.	April 7.		
Magee & Stanwood,	Book binders,	17	13		do.	April 7,	Communication with engine room, designate water closets and post notices.	Complied.
Belmont Knitting Mills,	Yarns,	2	38	3	do.	April 8.	Designate water closets, post notices,	Complied.
Duling & Buck,	Shoes,	40	10		Fair,	April 8,	Box one shaft, communication with engine room, designate and disinfect water closets and post notices pertaining to the act.	Complied.
Gimmi Bros.,	Printing,	40	20	3	Good,	April 8,	Comply with sections 7, 9, 10, 12 and 18,	Complied.
Lichen Bros.,	Cigars,	188	12	1	do.	April 9.		
Emil Wahl's,	Bone buttons,	111	14	12	do.	April 10.		
Henry Roelofs & Co.,	Felt hats,	130	85	8	do.	April 10.		
B. Hooley & Son.,	Printing,	9	42	9	do.	April 13,	Designate water closets and post notices,	Complied.
J. D. Orne & Co.,	Yarns,	3	47	7	do.	April 13,	Designate water closets and post notices,	Complied.
Yates & Troth,	Shirts,	6	8	2	do.	April 13.		
John Dittman,	Laundry,	2	16	5	do.	April 14.		
Edwards & Docker,	Paper boxes,	25	100		do.	April 14.		
W. J. Callahan,	Hats,	25	30		do.	April 14,	Bell to elevator, post notices and erect fire escape.	Complied.
William Horstman & Sons,	Trimmings,	100	300		do.	April 15,	Communication with engine room, designate water closets.	Complied.
Jos. Fussel & Son.,	Parasols,	4	12		Fair,	April 15,	Water closet for females, designate and screen the same, post notices.	Complied.
Keystone Skirt Company,	Skirts,	5	55		Good,	April 15,	Erect fire escape.	Complied.
P. Murtha,	Paper boxes,	5	10		Fair,	April 16,	Disinfect water closets, bell to elevator.	Complied.
S. S. Fretz.	Parasols,	75	175		Good,	April 16.		

PHILADELPHIA — *Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Daniels & Blumenthal,	Knee pants,	20	10	. .	1	Good.	April 17,	Guard hatchway and erect fire escape.	Complied.
Wallace & Cassady,	Hats,	10	9	. .	2	do.	April 17.		
Young, Smythe, Field & Co.,	Shirts.	325	175	. .	1	do.	April 20,	Box one shaft, designate closets and repair leak in same, and post notices.	Complied.
J. Cromptou & Co.,	Paper boxes,	15	85	. .	4	Fair,	. . . . .	Bell to elevator, designate and cleanse water closets, post notices, guard stairway.	Complied.
Bradley & Co.,	Publishers,	16	12	. .	6	Good,	April 21.		
Frederick Joues,	Printing,	19	16	. .	11	do.	April 21.		
C. F. Rump's Sons,	Pocket-books,	132	43	. .	. . .	do.	April 23.	Designate water closets,	Complied.
Houston, Courts & Jeynes,	Shoes,	15	15	. .	8	Fair,	April 24.	Designate and cleanse water closets, post notices.	Complied.
Lyon & Loeb,	Paper boxes,	15	45	. .	. . .	Good,	April 24.		
O'Brien Bros,	Shoes.	29	15	. .	. . .	do.	April 24.	Box one shaft and post notices,	Complied.
Overbrook Tailoring Company,	Tailoring,	25	75	. .	. . .	do.	April 25.	Box two shafts,	Complied.
Wolf Bros.,	Envelopes,	5	30	. .	. . .	do.	April 25.		
Jacob Datz.	Corsets,	10	140	. .	15	do.	April 27.		
John Y. Huber,	Blank books.	150	175	. .	38	do.	April 27.		
Kaufman Bros.,	Trimmings,	125	275	. .	29	do.	April 28.		
Thomas L. Southwick,	Printers,	9	9	. .	1	do.	April 29.		
H. M. Oliver,	Shoes,	57	18	. .	. . .	do.	April 30,	Bell ordered to elevator,	Complied.
Ben. F. Oblinger,	do.	95	30	. .	. . .	do.	April 30,	Box one shaft.	Complied.

Jos. Nagle,	Cigar boxes,	11	12	5	do.	May	1.		
Samuel Lees & Sons,	Notions,	15	65	8	do.	May	1.		
Lit Bros.,	Gloves,	3	32	2	Fair,	May	1	Disinfect water closets,	Complied
Hensel, Colladay & Co.,	Trimmings,	225	275	60	Good,	May	4.		
Tichnor & Co.,	Hats,	49	25	2	do.	May	4.		
Edward Darby & Sons,	Wire goods,	73	12	5	do.	May	5.		
Freedman, Levi & Co.,	Shoes.	80	30	1	do.	May	5.		
Weaver Malling Envelope and Box Company.	Envelopes and boxes,	7	18	3	do.	May	6,	Fire escape,	Complied.
Geo. W. Plumly,	Paper boxes,	50	300	78	do.	May	7,	Comply with sections 9 and 18,	Complied.
Middendorf Bros.,	Lace goods,	5	120		do.	May	7,	Box two shafts and erect fire escape.	Complied.
Gumpert Bros.,	Cigars,	275	125	38	Bad,	May	8,	Provide water closets for females.	Complied.
Den Steam Laundry,	Shirts,	25	275	22	do.	May	8,	Box two shafts and cleanse water closets,	Complied.
S. Miller & Son,	Shoes,	27	19		Good,	May	9.		
Wm. S. Chapman,	do.	40	18	4	do.	May	9.		
Allen & Marvin,	do.	22	28	5	do.	May	9.		
Bell Telephone Company,	Telephones,	430	70	17	do.	May	8.		
P. C. Thompson & Co.,	Soaps,	22	13		do.	May	11.		
Wm. F. Bernstein,	Woven wire goods,	17	13	7	do.	May	11,	Box two shafts, one coupling and post notices.	Complied.
Geo. D. Ellis & Sons,	Trusses,	17	8	2	do.	May	11,	Communication with engine room and post notices.	Complied.
P. C. Thompson & Co.,	Coffee.	35	40		do.	May	12.		
J. M. Hansell's Sons,	Envelopes,	10	25	2	do.	May	12.		
Wm. F. Duncan,	Trimmings,	8	20		do.	May	12.		
Allen & Martin,	Shoes.	50	25		do.	May	13.		
Keystone Shoe Company,	do.	12	8	4	do.	May	13.		
Luxury Tobacco Works,	Tobacco,	75	75	8	do.	May	13.		
Schrack & Sherwood,	Trimmings,	10	40		do.	May	14.		
J. Roggenberger,	Paper boxes.	3	35		do.	May	14.		

PHILADELPHIA—*Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
P. C. Lang,	Coats,	12	23	. .	. . .	Bad, .	May 15,	Comply with sections 9, 10 and 12, ...	Complied.
H. Orth, Jr.,	Paper boxes,	7	20	. .	2	do. .	May 15,	Cleanse water closets and post notices. . .	Complied.
Winelander & Co.,	Parasols,	15	25	. .	. . .	Good,	May 15.		

STATISTICS OF FACTORIES VISITED—SECOND DISTRICT.

MT. HOLLY SPRINGS.

Mt. Holly Paper Co., Mill No. 1. . .	Writing paper,	29	57	. .	. . .	Good,	Dec. 4,	Guard elevator, ...	Complied.
Mt. Holly Paper Co., Mill No. 2, . .	do.	37	41	. .	. . .	do.	Dec. 4.		
W. A. & A. T. Mullin,	Book paper,	20	15	. .	. . .	do.	Dec. 5.		
Mt. Holly Springs Paper Mill No. 2,	Paper,	36	50	. .	. . .	do.	April 9.		
Mt. Holly Paper Mill No. 1, ...	do.	42	62	. .	. . .	do.	April 9.		
W. A. & A. T. Mullin.	do.	19	18	. .	. . .	do.	April 9,	Comply with sections 3 and 12, ...	Complied.

CHAMBERSBURG, FRANKLIN COUNTY.

William Heyser.	Paper, ...	13	12	. .	. . .	Good,	April 8,	Comply with seetions 3 and 12, ...	Complied.
Chambersburg Hosiery Company, .	Hosiery, ...	8	40	. .	2	do.	April 8.		

HARRISBURG, DAUPHIN COUNTY.

Harrisburg Manufacturing Co., . .	Overalls and pantaloons. . .	8	42	. .	2	Good,	Dec. 1.		
Harrisburg Burial Case Company, .	Burial cases, ...	57	19	. .	. . .	do.	Dec. 1.		
Star Laundry, ...	Laundry.	4	11	. .	. . .	do.	Dec. 1.		
Dives. Pomeroy & Stewart, . . .	Millinery and dry goods, . . .	45	60	. .	5	do.	Dec. 2.		
Capital Shirt Company, ...	Shirts and laundry.	10	90	. .	5	do.	Dec. 2.		
Astrich's Palace of Fashion. . . .	Millinery and dry goods, . . .	4	29	. .	1	do.	Dec. 2.	Comply with sections 2 and 3, ...	Complied.
Harrisburg Silk Mill, ...	Silk, ...	243	203	. .	56	do.	Dec. 2.	Comply with sections 2 and 3.	Complied.
Mt. Pleasant Printing Establishment.	Printing and binding. . . .	30	10	. .	. . .	do.	Dec. 2.		
State Printing Office, ...	Printing, ...	100	60	. .	. . .	do.	Dec. 2,	Erect fire escape.	
W. H. Breneman, ...	Mince meat, ...	1	33	. .	8	do.	Dec. 3,	Comply with section 2.	
Harrisburg Burial Case Company. .	Burial cases and supplies. . .	70	20	. .	. . .	do.	April 13.		
Harrisburg Shoe Manufacturing Co.,	Ladies' and children's shoes,	215	85	. .	2	do.	April 14.		
Capital Shirt Company, ...	Sbirts, ...	. . . .	51	. .	4	do.	April 14.		
Brookwood Hosiery Company, . . .	Hosiery.	5	35	. .	10	do.	April 14,	Comply with section 2, ...	Complied.
Star Laundry, ...	Laundry, ...	4	13	. .	. . .	do.	April 15.		
Harrisburg Paper Box Company, .	Paper boxes, ...	5	21	. .	. . .	do.	April 15.		
Monaghan-Bay Company, ...	Ladies' and children's shoes,	150	100	. .	7	do.	April 15.		
Chas. L. Bailey & Co., ...	Nails.	375	. . . .	. .	31	do.	April 15.		
Harrisburg Manufacturing Co.. . .	Overalls and coats, ...	7	41	. .	. . .	do.	April 15.		
Capital Shirt Manufacturing Co., .	Shirts, ...	15	90	. .	17	do.	April 16,	Comply with section 2.	Complied.

HALIFAX, DAUPHIN COUNTY.

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Halifax Shoe Manufacturing Co., .	Ladies' and children's shoes,	15	15	. .	1	Good,	April 17.		

MT. JOY, LANCASTER COUNTY.

P. C. Fulweiler, ...	Cigars, ...	23	10	. .	. . .	Good,	Jan. 26.		
Geo. Brown & Brown Bros., ...	Weaving cotton and woolen goods.	45	30	. .	7	do.	Jan. 26,	Comply with sections 2 and 3, ...	Complied.

MARIETTA, LANCASTER COUNTY.

P. C. Fulweiler, ...	Cigars, ...	83	27	. .	13	Good,	May 28.		

MILTON.

West Branch Hosiery Company, . .	Hosiery, ...	1	14	. .	. . .	Good,	May 7.		

MECHANICSBURG, CUMBERLAND COUNTY.

Huston Net Company,	Leather nets,	8	10	..	5	Good.	Dec.	3.		
J. W. Ringrose Manufacturing Co.,	Fly nets, horse collars and whips.	63	66	..	17	do.	Dec.	3.		
Carlisle Shoe Manufacturing Co.,	Shoes.	140	110	..	...	do.	Dec.	4.		
Newville Knitting Mill,	Hoisery,	18	66	1	21	do.	April	9,	Comply with sections 2 and 3,	Complied.
Carlisle Paper Box Company.	Paper boxes,	5	10	..	1	do.	April	10,	Comply with sections 2, 3 and 12	Complied.
G. W. Neidich & Co.,	Ladies' shoes,	210	130	..	...	do.	April	10.		
Bedford Shoe Company,	Children's shoes.	18	17	..	2	do.	April	10.		
Huston Net Company,	Fly nets,	13	30	..	6	do.	April	10.		
J. W. Ringrose Manufacturing Co.,	Fly nets. horse collars and whips.	88	25	..	18	do.	April	10,	Keep record book.	Complied

EASTON.

Easton Boot and Shoe Company,	Boots and shoes,	85	20	..	13	Good.	Dec.	9,	Box all belts,	Complied.
Easton Silk Mill,	Silk throwing,	70	90	..	51	Poor.	Dec.	9,	Put water closets in good condition.	Complie
Matteawan Felting Company.	Felt shoes and slippers,	65	25	..	12	Good.	Dec.	9,	Guard fly wheel and box belts,	Complied.
Standard Manufacturing Company,	Shirts and overalls,	4	36	..	2	do.	Dec.	9.		
John Hirely,	do.	....	50	..	4	do.	Dec.	9.		
Lehigh Mill Company No. 1,	Cotton spinning,	45	66	..	39	do.	Dec.	10.	Box belts and pulleys,	Complied.
Lehigh Mill Company No. 2.	Weaving and dyeing,	21	55	..	7	do.	Dec.	10,	Box belts and pulleys	Complied.
Bush & Bull,	Dry goods,	30	20	..	2	do.	Dec.	10.		
Laughlin & Son,	Dry goods and carpets,	15	15	..	...	do.	Dec.	10.		
R. & H. Simon,	Silk throwing,	75	75	..	55	do.	April	22.		
Standard Shirt Company,	Shirts.	4	31	..	...	do.	April	22.		
Easton Boot and Shoe Company,	Boots and shoes,	150	20	..	10	do.	A			

EASTON—*Continued.*

NAMES OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females	Under 12.	12 to 16.				
John Hirely,	Shirts and overalls,	....	45	..	...	Good.	April 23.		
Matteawan Felting Company.	Felt shoes,	81	29	..	23	do.	April 23.		
Lehigh Mill Company No 1,	Cotton spinning,	50	75	..	37	do.	April 23.		
Lehigh Mill Company No. 2,	Weaving woolen goods,	15	60	..	7	do.	April 23.		

BETHLEHEM.

Bethlehem Silk Mill.	Silk ribbons,	75	75	..	15	Good.	Dec. 11.		
Lehigh Valley Silk Mill,	Silk cloth,	77	119	..	48	do.	Dec. 11.		
Bethlehem Silk Company,	Silk throwing,	32	141	..	114	do.	Dec. 11.		
Cutter Silk Manufacturing Co..	Spool silk, braid and button,	106	219	..	64	do.	Dec. 11.		
C. & J. Gould,	Hosiery,	7	48	..	7	do,	Dec. 11.		
C. & J. Gould,	do.	4	71	..	16	do.	April 21.	Keep record book.	Complied.
Fichter & Martin,	Silk ribbon weaving,	60	40	..	23	do.	April 21.		
Bethlehem Silk Company,	Silk throwing,	110	115	..	117	do.	April 21.		
Cutter Silk Mill,	Silk weaving,	60	300	..	59	do.	April 22.		
Lehigh Silk Mill,	do.	70	90	..	29	do.	April 22.		

Shamokin, Northumberland County.

C. F. Heim & Co.,	Door knobs.	4	10	..	...	Good.	Jan. 29.		
J. W. Forry & Son	Hosiery.	2	38	..	...	do.	Jan. 29.		
J. W. Forry & Son,	do.	4	51	..	16	do.	May 6.	Comply with sections 2 and 3.	Complied.

Slatington.

Thomas Kane & Co.,	Noiseless school slates,	8	36	..	...	Good.	Dec. 12.		
C. F. Krause.	do do.	5	35	..	9	do.	Dec. 12.	Comply with sections 2 and 3,	Complied.
Thomas Kane & Co.	do. do.	9	43	..	7	do.	April 28.	Comply with sections 2 and 3, and erect fire escape.	Complied.
James Coffin,	do. do.	15	35	..	4	do.	April 28.	Comply with with sections 2 and 3.	Complied.
E. F. Krause,	do. do.	5	45	..	13	do.	April 28.		

Catasauqua.

Unicorn Silk Manufacturing Co.,	Silk cloth,	103	42	..	27	Good.	Dec. 12.	Comply with section 12,	Complied.
Unicorn Silk Mill,	Silk cloth and plush,	151	56	..	29	do.	April 27.		

Tamaqua.

Tamaqua Knitting Mill.	Hosiery,	5	90	..	36	Good.	April 29.		
Tamaqua Boot and Shoe Company,	Boots and shoes.	46	19	..	1	do.	April 29.		

MAUCH CHUNK.

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED. Males.	Females.	Under 12.	12 to 16.	Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
Mauch Chunk Shoe Manufacturing Company.	Ladies' and children's shoes.	31	19	. .	2	Good.	Dec. 13.		
The Earnest Silk Mill, ...	Silk ribbon, ...	30	121	. .	50	do.	Dec. 13,	Comply with sections 2 and 3.	Complied.
The Earnest Silk Mill, ...	do.	50	100	. .	51	do.	April 28.		
Mauch Chunk Shoe Manufacturing Company	Ladies' and children's shoes,	28	18	. .	4	do.	April 29.		

POTTSVILLE.

Standard Shirt Company, ...	Shirts, ...		140	. .	4	Good.	Dec. 18.		
Standard Laundry, ...	Laundry, ...	5	15	. .	. . .	do.	Dec. 18.		
Tilt Silk Mill, ...	Silk ribbons.	150	325	. .	183	do.	Dec. 19.		
Pottsville Knitting Mill, ...	Hosiery.	1	29	. .	6	do.	Dec. 19.		
Standard Laundry Company, . . .	Laundry.	3	37	. .	1	do.	April 30.		
Standard Shirt Company.	Shirts.	1	94	. .	2	do.	April 30.		
John Reber.	Hosiery, ...	5	30	. .	5	do.	April 30.		
Tilt Silk Mill.	Silk ribbons, ...	200	350	. .	240	do.	April 30.		

WILKES-BARRE.

Wilkes-Barre Silk Mill,	Silk,	30	240	..	20	Good,	Dec. 15,		
Sanson Cutlery Company,	Table cutlery,	119	6	..	7	do.	Dec. 15,	Hours of labor contrary to law,	Complied.
Hazard Manufacturing Company,	Rope and wire,	161	....	..	16	do.	Dec. 16.		
Newell Clothing Company,	Clothing,	3	46	..	...	do.	Dec. 16.		
Gailand, Bros. & Co.,	Ladies' underwear,	17	400	..	46	do.	Dec. 16.		
Wilkes-Barre Lace Manufacturing Company.	Lace,	101	174	..	107	do.	Dec. 16.	Post names and keep register of same,	Complied.
Wilkes-Barre Lace Manufacturing Company,	do.	100	200	..	107	do.	Mar. 2,	Comply with sections 3 and 12,	Complied.

WEATHERLY.

Weatherly Silk Mill.	Silk throwing,	50	150	..	115	Good,	Dec. 18.		
Weatherly Silk Mill,	do. do.	135	325	..	306	do.	April 29,	Comply with sections 2 and 3,	Complied.

SCHUYLKILL HAVEN.

Enterprise Hosiery Company.	Hosiery,	3	44	..	7	Good.	Dec. 19.		
Spring Garden Hosiery Company,	do.	6	34	..	13	do.	Dec. 19.		
Standard Hosiery Company,	do.	3	44	..	8	do.	Dec. 19.		
Baker & Sheridan,	Underwear.	5	12	..	2	do.	April 30.		
W. F. Dougherty,	Paper boxes.	1	11	..	...	do.	April 30.		
Bast & Fidler,	Underwear,	4	11	..	...	do.	April 30,	Comply with section 1,	Complied.
Spring Garden Hosiery Company,	Hosiery,	5	45	..	21	do.	April 30,	Keep record book,	Complied.

NAZARETH.

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of Inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
H. Kremer,	Hosiery,	18	72	..	7	Good,	April 23.		
Nazareth Manufacturing Company,	Underwear,	10	70	..	5	do.	April 23.		

LANCASTER.

Dana, Graham & Son,	Horn combs,	26	11	..	3	Good,	Dec. 22.		
Phœnix Cork Works,	Corks,	37	18	..	19	do.	Dec. 22,	Comply with sections 2 and 3,	Complied.
Lancaster Cork Works,	do.	25	25	..	5	do.	Dec. 22.		
Stevens Cotton Mill No. 7,	Cotton spinning,	63	34	..	19	do.	Dec. 23,	Comply with sections 2 and 3.	
Conestoga Mills,	Cotton spinning and weaving,	180	300	..	40	do.	Dec. 23,	Comply with sections 2 and 3.	Complied.
Conestoga Mill No. 3,	do. do. do.	144	186	..	65	do.	Dec. 23,	Comply with sections 2 and 3,	Complied.
Conestoga Steam Cotton Mill No. 1,	do. do. do.	100	140	..	77	do.	Dec. 24.		
Frank L. Krauskop,	Cigar boxes,	38	18	..	12	do.	Dec. 24.		
Williamson & Foster,	Merchandise,	45	16	..	...	do.	Dec. 29,	Comply with sections 1, 2 and 3,	Complied.
Lancaster Caramel Company,	Candies,	109	331	..	123	do.	Dec. 29.		
New York Store,	Dry goods and notions,	38	12	..	6	do.	Dec. 29,	Comply with sections 2 and 3,	Complied.
Arnold & Co.,	Corks,	80	75	..	45	do.	Dec. 29,	Comply with sections 2 and 3,	Complied.
Astrich's Palace of Fashion,	Millinery and Fancy goods,	10	38	1	1	do.	Jan. 2,	Comply with sections 1, 2 and 3,	Complied.

Oblinger Bro.,	Cigars.	225	75	..	18	do.	Jan. 19,	Comply with section 2,	Complied.
J. L. Metzger & Co.,	do.	40	30	..	3	do.	Jan. 19,	Comply with sections 2 and 3,	Complied.
Hager & Bro.,	Dry goods, carpets clothing,	34	16	..	4	do.	Jan. 22,	Comply with sections 1, 2 and 3.	
Strauss Bros.,	Cigars,	30	40	..	2	do.	Jan. 26,	Comply with sections 2 and 3,	Complied.
Inquirer Publishing Company,	Printing and binding,	43	12	..	...	do.	Jan. 27.		
J. S. Gleim & Co.,	Cigars,	25	25	..	9	do.	Jan. 27.		
John F. Reed & Co.,	do.	30	50	..	6	do.	Jan. 28.		
Fiss & Doerr,	do.	18	24	..	...	do.	Jan. 28.		
George E. Wisner,	Paper and cigar boxes,	5	24	..	3	do.	Jan. 28,	Comply with sections 2 and 3,	Complied.
Conestoga Cotton Mill,	Cotton spinning and weaving,	143	187	1	65	do.	Mar. 21,	Dismiss one child under 12 years of age,	Complied.
Conestoga Mill No. 3,	do. do. do.	144	186	..	63	Bad,	April 18,	Provide suitable water closets,	Complied.
H. S. Shirk & Sons,	Cotton spinning,	60	40	..	35	do.	April 18.	Comply with sections 2 and 10.	
Oblinger Bros. & Co.,	Cigars,	140	120	..	11	Good.	May 19.		
John F. Reed & Co.,	do.	15	35	..	6	do.	May 19,	Guard elevator,	Complied.
Lancaster Caramel Company,	Candies,	190	325	..	141	do.	May 20.		
Wickersham Printing Company,	Printing books, etc.,	43	12	..	...	do.	May 20.		
Rose Bros. & Hartman,	Umbrellas.	75	100	..	28	do.	May 20.		
Strauss Bros.,	Cigars,	50	40	..	2	do.	May 20.		
F. L. Krauskop,	Cigar boxes,	36	14	..	13	do.	May 21.		
B. G. Dodge,	Corks,	25	25	..	5	do.	May 21.		
D. Graham & Son,	Horn combs,	26	11	..	3	do.	May 21.		
John L. Metzger & Co.,	Cigars,	34	46	..	4	do.	May 21.		
Osbourne & Co.,	Gold and silver novelties,	88	12	..	10	do.	May 21,	Comply with sections 2 and 3,	Complied.
Phœnix Cork Works,	Corks,	37	18	..	19	do.	May 21.		
Conestoga Steam Cotton Mill No. 1,	Cotton spinning and weaving,	100	140	..	65	do.	May 23.		
Arnold & Co.,	Corks,	75	75	..	45	do.	May 25.		
George Wisner,	Cigars and paper boxes,	12	17	..	4	do.	May 25.		
John S. Gleim & Co.,	Cigars,	20	40	..	3	do.	May 25.		
Watt & Shand,	Dry goods,	38	12	..	6	do.	May 29.		

LANCASTER—*Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Hager Bros.,	Dry goods, wall paper and clothing,	34	16	. .	4	Good,	May 29,		
Astrich's Palace of Fashion.	Millinery and fancy goods,	9	38	. .	. . .	do.	May 29,		
Williamson & Foster,	General merchandise,	45	16	. .	4	do.	May 29,		

LEBANON.

Lebanon Industrial Works,	Handkerchiefs and shirts,	25	275	. .	75	Fair,	Dec. 30.	Comply with section 10,	Complied.
F. B. Long,	Cigars,	40	35	. .	8	Good,	Dec. 30,	Comply with sections 2 and 3.	Complied.
D. B. Long,	do.	62	23	. .	1	do.	April 3,	Comply with sections 2 and 3.	
F. B. Long,	do.	30	30	. .	13	do.	April 3,	Comply with sections 2 and 3.	Complied.
Rauch & Bro.,	Shirts,	2	23	. .	1	do.	April 3,	Comply with sections 2 and 3,	Complied.
Excelsior Novelty Works,	Toys and cigar boxes,	13	4	. .	10	do.	April 3,	Comply with sections 2, 3 and 12.	
Hower & Bros.,	Cigars,	92	18	. .	12	do.	April 3,	Comply with sections 2 and 3.	Complied.
Lebanon Match Company,	Matches,	23	42	. .	26	do.	April 3.		
Lebanon Industrial Works,	Shirts and handkerchiefs,	20	280	. .	85	do.	April 4.		

DALLASTOWN, YORK COUNTY.

C. Kohler & Co.,	Cigar boxes,	10	12	. .	. . .	Good,	Jan. 7.		
M. Hose,	do. do.	9	11	. .	1	do.	Jan. 13.		

EAST PROSPECT, YORK COUNTY.

E. J. Sitler,	Cigars,	30	35	. .	1	Good,	Jan. 7,	Comply with sections 1, 2 and 3.	
Acme Cigar Company,	do.	13	12	. .	1	do.	Jan. 7.		

YORKANA, YORK COUNTY.

J. W. Horn,	Cigars,	15	7	3	4	Fair.	Jan. 7,	Comply with sections 1. 2, 3 and 10.	
R. F. Strickler,	do.	18	19	. .	1	Poor	Jan. 7,	Comply with sections 2, 3 and 10.	Complied.

YORK, YORK COUNTY.

Holtzman Manufacturing Company,	Underwear,	3	72	. .	5	Good,	Jan. 12,	Comply with section 2,	Complied.
Click Cigar Company,	Cigars,	61	64	. .	16	do.	Jan. 12,	Comply with section 2.	Complied.
P. C. Weist & Co.,	Candles.	63	255	. .	123	do.	Jan. 12.		
York Wire Cloth Company.	Wire cloth.	20	35	. .	. . .	do.	Jan. 12.		
Schriver & Pfluger.	Cigars,	12	13	. .	4	do.	Jan. 12.		
K. Bayler.	do.	31	32	. .	7	do.	Jan. 12.		

YORK, YORK COUNTY—*Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Charles A. Bayler,	Cigars.	30	60	. .	24	Good.	Jan. 12.		
Jacob A. Mayer,	do.	120	30	. .	12	do.	Jan. 13.		
J. K. Pfaltzgraff & Co.,	do.	17	13	. .	5	do.	Jan. 13.		
Myers & Adams,	do.	29	10	. .	2	do.	Jan. 14.		
Thomas & Winter,	Cigar boxes,	12	13	. .	1	do.	Jan. 14.		
York Match Company,	Matches,	15	91	. .	7	do.	Jan. 14,	Comply with section 2,	Complied.
H. W. Heffner,	Cigar boxes,	25	22	. .	4	do.	Jan. 14.		
S. S. Flinchbaugh.	Cigars and cigar boxes,	10	7	. .	6	do.	Jan. 14,	Comply with sections 2 and 3,	Complied.
J. E. Kauffman.	Cigars,	22	8	. .	5	Fair,	Jan. 14,	Comply with sections 2, 3 and 10.	

HANOVER, YORK COUNTY.

H. A. Bair,	Cigar-boxes,	6	10	. .	1	Good,	Jan. 15.		
Bechtel & Son,	Cigar boxes and hosiery,	6	18	. .	. . .	do.	Jan. 15.		
Hanover Cordage Company,	Rope and cordage,	15	9	. .	2	do.	Jan. 15.		
Jene Frysinger,	Cigars,	30	20	. .	. . .	do.	Jan. 15.		
Hanover Shoe Company,	Ladies' and children's shoes,	22	20	. .	1	do.	Jan. 15.		

McSHERRYSTOWN, ADAMS COUNTY.

F. K. Smith,	Cigars,	41	19	. .	. . .	Good,	Jan. 15.		
Martin & Co.,	do.	29	26	. .	. . .	do.	Jan. 15.		
Samuel L. Johns,	do.	65	45	. .	3	do.	Jan. 16.		
Charles H. Busbey,	do.	23	31	. .	3	do.	Jan. 16.		
Conewago Cigar Box Company.	Cigar boxes.	12	22	. .	3	do.	Jan. 16.		
John A. Liners,	Paperboard boxes,	2	28	. .	1	do.	April 7.		

SPRING GROVE, YORK COUNTY.

Spring Grove Paper Mill,	Paper,	95	35	. .	14	Good,	Jan. 16,	Post notices and box belts,	Complied.
Bies Olp.	Cigars,	4	13	. .	1	do.	Jan. 13.		
Spring Grove Paper Mill,	Paper,	107	32	. .	. . .	do.	April 6.	Comply with section 12.	Complied.

COLUMBIA, LANCASTER COUNTY.

John Fendrick & Son,	Cigars,	19	18	. .	. . .	Good,	Jan. 20.		
Triumph Shirt Company,	Shirts,	3	51	. .	3	do.	Jan. 20.		
John Fendrick & Son,	Cigars,	19	18	. .	. . .	do.	May 28.		
Columbia Shirt Manufacturing Co.,	Shirts and laundry,	5	65	. .	2	do.	May 28.		

WRIGHTSVILLE, YORK COUNTY.

Jacob Kline.	Cigars,	15	20	. .	6	Good,	Jan. 20.		
S. R. Kocher,	do.	10	13	. .	3	do.	Jan. 20.		
D. S. Detwiler,	do.	30	35	. .	10	do.	Jan. 20,	Comply with section 2.	Complied.

EPHRATA, LANCASTER COUNTY.

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Martin Kingport,	Cigar boxes,	8	10	. .	. . .	Good,	Jan. 21.		
Joseph Cooper,	Cigars.	26	18	. .	3	do.	Jan. 21.		
Isaac Brown,	Cigar boxes,	8	12	. .	2	do.	Jan. 21.		
Empire Cigar Company,	Cigars,	86	74	. .	21	do.	Jan. 21.		
A. W. Mentzer.	do.	35	25	. .	. . .	do.	Jan. 21,	Comply with section 3,	Complied.
A. W. Mentzer,	do.	35	25	. .	. . .	do.	. . . . .		
Henry Sthroll. Agent,	do.	22	18	. .	. . .	do.	. . . . .		
J. Cooper,	do.	35	20	. .	3	do.	. . . . .	Guard hatch hole and hoisting machine,	Complied.
I. B. Brown,	Cigar boxes,	6	10	. .	2	do.	. . . . .		
Martin Kingport,	Cigars,	90	50	. .	31	do.	. . . . .		
Martin Kingport,	Cigar boxes.	10	15	. .	1	do.	. . . . .		

AKRON.

P. W. Weidman,	Cigar boxes,	8	9	. .	1	Good,	May 26,		
C. W. Zwally,	Cigars,	22	11	. .	1	do.	May 26,		
Elias Wolf,	do.	26	9	. .	1	do.	May 26,		

REAMSTOWN, LANCASTER COUNTY.

J. G. Root,	Cigars,	30	30	..	...	Fair,	Jan. 23,	Comply with sections 1 and 10,	Complied.
B. L. Frankhauser,	do.	5	12	1	...	Good.	Jan. 23,	Comply with sections 1, 2 and 3.	

MANHEIM, LANCASTER COUNTY.

C. F. Fisher,	Cigars,	17	9	..	1	Good.	Jan. 23,	Comply with sections 2 and 3,	Complied.
F. S. Beck,	do.	15	10	..	...	do.	Jan. 23.		
Enterprise Hosiery Company,	Hosiery,	11	69	..	11	do.	Jan. 23.		

DENVER, LANCASTER COUNTY.

J. G. Root,	Cigars,	10	11	..	...	Good,	Jan. 23.		

ADAMSTOWN, LANCASTER COUNTY.

S. P. Prutzman,	Cigars,	11	13	..	...	Good,	April 2.		
W. R. Stork,	do.	19	12	..	...	do.	April 2.		
Fitchorn, Redclay & Co.,	Wool hats,	29	10	..	4	Bad,	April 2,	Comply with sections 2, 3 and 10,	Complied.

PETERSBURG, LANCASTER COUNTY.

A. W. Zug,	Cigars,	1	13	..	...	Good,	May 27.		

BROWNSTOWN, LANCASTER COUNTY.

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
J. L. Mumma, ...	Furniture and cigar boxes, .	35	20	. .	3	Good,	May 26.		

SILVER SPRING, LANCASTER COUNTY.

C. W. Bruckhart.	Cigars, ...	3	13	. .	. . .	Good,	May 27.		

LANDISVILLE, LANCASTER COUNTY.

R. F. Swan, ...	Cigars, ...	30	13	. .	3	Good,	May 27.		

WATSONTOWN.

Watsontown Boot and Shoe Co., . .	Boots and shoes, ...	60	15	. .	2	Good,	Feb. 2.		

MILROY.

Thompson Bro., ...	Seamless woolen hosiery, . .	30	95	. .	26	Good,	May 14.		

LOCK HAVEN, CLINTON COUNTY.

Lock Haven Nail Manfg. Co.,	Nails,	75	....	..	15	Good,	Feb. 6,	Comply with sections 2 and 3.	
New York and Penna. Paper Co.,	Books and express paper,	124	26	..	1	do.	Feb. 7,	Comply with sections 2. 3 and 12,	Complied.
New York and Penna. Paper Co.,	do. do.	116	24	..	...	do.	May 12.		
T. H. Herman,	Cigars.	30	30	..	7	do.	May 12,	Comply with sections 2 and 3,	Complied.

BELLEFONTE, CENTRE COUNTY.

Bellefonte Iron and Nail Works,	Iron and nails,	275	....	..	11	Good,	Feb. 10,	Comply with sections 2 and 3,	Complied.

HUNTINGDON, BLAIR COUNTY.

J. C. Blair,	Stationery,	45	75	..	4	Good,	Feb. 11,	Comply with sections 2 and 3,	Complied.
J. C. Blair,	Stationery,	45	75	..	4	do.	May 13.		

TYRONE.

Morrison & Cars,	Paper,	150	35	..	3	Good,	Feb. 11.		
Morrison & Cars,	Paper,	150	35	..	3	do.	May 13.		

WILLIAMSPORT.

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Williamsport Furniture Company,	Furniture,	325	....	..	12	Good.	Feb. 2,	Comply with sections 2 and 3,	Complied.
Baum & Ullman,	Suspenders.	5	40	..	...	do.	Feb. 2.		
Wire Buckle Suspender Coompany,	do.	25	125	..	12	do.	Feb. 3,	Comply with sections 2 and 3, and erect fire escapes.	Complied.
Williamsport Kindling wood Co.,	Kindling wood,	67	45	..	2	do.	Feb. 3,	Comply with sections 2 and 3.	
Lycoming Rubber Company,	Rubber boots and shoes,	200	175	..	11	do.	Feb. 3,	Comply with section 2.	
G. L. Krouse,	Kindling wood,	50	45	..	7	do.	Feb. 4,	Comply with sections 2 and 3,	Complied,
Standard Candy Company,	Candies,	30	13	..	1	do.	Feb. 4.		
Williamsport Candy Company,	do.	32	13	..	1	do.	Feb. 4.		
Ertel Bros,	Cigars and paper boxes,	10	25	..	...	do.	Feb. 4.		
Lloyd Laundry and Shirt Company,	Laundry and shirts,	9	29	..	...	do.	Feb. 4,	Comply with section 1.	Complied.
Williamsport Iron and Nail Works,	Nails.	200	....	..	12	do.	Feb. 5,	Comply with sections 2 and 3,	Complied.
Williamsport Shirt Coompany.	Shirts,	3	22	..	...	do.	Feb. 5.		
Lycoming Pantaloon Company,	Pantaloons,	4	36	..	...	do.	Feb. 5.		
Self-locking Buckle Suspender Co.,	Suspenders,	12	28	..	1	do.	Feb. 5.		
Cornwell Manufacturing Company,	Overalls, pantaloons and shirts	7	33	..	...	do.	Feb. 5.		
Baum & Ullman,	Wire buckle suspenders,	5	45	..	...	do.	May 7,	Erect fire escape.	Complied.
Wire Buckle Suspender Company,	Suspenders,	25	130	..	7	do.	May 7.		
Standard Candy Manfg. Co.,	Candies,	25	15	..	2	do.	May 7.		
G. L. Krouse,	Kindling wood.	60	30	..	20	do.	May 7.		
Cornwell Manufacturing Company,	Overalls, pantaloons and shirts,	8	32	..	...	do.	May 7.		

Williamsport Shirt Company,	Shirts,	2	20			do.	May 7.		
Lycoming Pantaloon Company	Pantaloons.	6	34			do.	May 8.		
Self-Locking Suspender Company.	Self-locking suspenders,	3	30		5	do.	May 8.		
Lycoming Rubber Company,	Rubber boots and shoes,	175	175		2	do.	May 8.	Comply with sections 2 and 3.	
Lloyd Laundry and Shirt Company,	Shirts,	7	43			do.	May 8.	Box belts and provide means of communication between second and third floor and engine room.	Complied.
Williamsport Furniture Works,	Furniture,	235			17	do.	May 8.	Erect fire escape,	Complied.
Williamsport Kindling Wood Co.,	Kindling wood,	80	45		10	do.	May 8.		
Williamsport Iron and Nail Works,	Nails and plates,	204			26	do.	May 9.		
Ertel Bros.,	Cigars and paper boxes,	9	25		2	do.	May 9.		
Williamsport Candy Mafng. Co,	Candy,	30	15		1	do.	May 9.		

PITTSTON.

Galland Brôs.,	Ladies' underwear,	2	132		8	Good,	Feb. 18,	File certificates, post notices and keep record of same.	Complied.
Luzerne Knitting Mill,	Ladies' and gents' underwear,	25	75		3	do.	Feb. 18.		
R. C. Hitchner & Son,	Crackers and biscuits,	18	10			do.	Feb. 18.		
Notman & Stevens,	Cigars and paper boxes,	5	20			do.	Feb. 18.		
Alpine Knitting Mill,	Underwear,	5	70		2	do.	Feb. 19.		

BLOOMSBURG.

Bloomsburg Silk Company.	Silk,	15	30		2	Good,	Feb. 17.		
Bloomsburg Carpet Works.	Carpets,	35	60		8	do.	Feb. 17.	File certificates, post notices and keep record of same.	Complied.
Bloomsburg Worsted Company,	Worsted yarns,	20	20	1	15	do.	Feb. 17.	Comply with sections 1, 2, 3 and 11.	Complied.
Bloomsburg Woolen Mill,	Cashmere and woolen goods,	25	25		6	do.	Feb. 17.	File certificates, post notices and keep record of same.	Complied.

CATAWISSA.

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Catawissa Boot and Shoe Company,	Boots and shoes, ...	28	17	. .	5	Good,	Feb. 16.		

SCRANTON, LACKAWANNA COUNTY.

Alfred Harvey, ...	Silk throwing, ...	3	200	. .	26	Good,	Feb. 19,	Comply with sections 2, 3 and 12, ...	Complied.
Scranton Stove Works, ...	Stoves, ...	150	. . . .	. .	15	do.	Feb. 19,	File certificates, post notices and keep record book.	Complied.
Sanquoit Silk Mills, ...	Silk, ...	35	565	. .	304	do.	Feb. 19.		
Lackawanna Mills, ...	Woolen underwear, ...	75	150	. .	34	do.	Feb. 20.		
Scranton Button Company, ...	Buttons, ...	50	50	. .	26	do.	Feb. 20.		
Meadow Brook Silk Mill, ...	Silk, ...	9	151	. .	26	do.	Feb. 20,	File certificates, post notices and keep record book.	Complied.
Lackawanna Steam Laundry, . . .	Laundry.	9	29	. .	. . .	do.	Feb. 23.		
J. C. Highriter, ...	Shirts and laundry.	4	11	. .	. . .	do.	Feb. 23.		
Garney, Brown & Co., ...	Cigars, ...	40	40	. .	31	do.	Feb. 23.		
Scranton Glass Works, ...	Glass bottles, ...	350	. . . .	. .	70	do.	Feb. 23,	Comply with sections 2 and 3, ...	Complied.
Eureka Laundry Company, ...	Laundry, ...	7	15	. .	. . .	do.	Feb. 23.		
S. G. Blanchard & Son, ...	Cigars and paper boxes, . . .	3	17	. .	. . .	do.	Feb. 23.		
Shart & Flinn, ...	Cigars, ...	13	13	. .	1	do.	Feb. 24.		

Clark & Snover,	Smoking tobacco,	12	53	..	...	do.	Feb. 24.			
Becker Bros.,	Cigars,	10	10	..	...	Bad, .	Feb. 24,	Comply with sections 3 and 10,		Complied.
Grass, Faster & Co.,	Dry goods,	17	8	1	3	Good,	Feb. 25,	Comply with sections 2 and 3,		Complied.
Clelland, Simpson & Taylor,	do.	48	25	..	8	do.	Feb. 25.			
Boston Dry Goods Store,	do.	19	19	..	4	do.	Feb. 25.			
Goldsmith Bros. & Co.,	do.	30	20	..	6	do.	Feb. 25,	Comply with sections 2 and 3,		Complied.
Thomas Lucas & Son,	do.	6	14	..	1	Bad, .	Feb. 25,	Comply with sections 2, 3 and 10.		
Lackawanna Steel and Iron Co.,	Iron and steel,	500	....	..	25	Good,	Feb. 25,	Comply with sections 2 and 3,		Complied.

HONESDALE.

Florence Silk Mill,	Silk throwing and weaving, .	35	126	..	50	Good,	Feb. 26,	Comply with sections 2 and 3,		Complied.
Honesdale Glass Works,	Glass bottles,	83	....	..	22	do.	Feb. 26,	Comply with sections 2 and 3,		Complied.
Glass Decorative Works,	Glass decorating,	5	25	..	...	do.	Feb. 27.			
Honesdale Shirt and Hosiery Co.,	Shirts and hosiery,	2	18	..	...	do.	Feb. 27.			
Honesdale Woolen Mill,	Woolen goods,	20	25	..	...	do.	Feb. 27.			
Durland, Thompson & Co.,	Ladies' and gents' shoes, . .	82	23	..	2	do.	Feb. 27.			
Honesdale Shoe Company,	do. do. . .	21	10	..	1	do.	Feb. 27,	Comply with sections 2, 3 and 12,		Complied.

HAWLEY, WAYNE COUNTY.

Hawley Glass Company,	Glass bottles,	100	....	..	20	Good,	Feb. 28,	Comply with sections 2 and 3,		Complied.
Bellemont Silk Mill.	Silk throwing and weaving, .	64	200	..	69	do.	Feb. 28,	Comply with sections 2 and 3,		Complied.

WHITE MILLS, WAYNE COUNTY.

NAME OF FACTORY OR WORKSHOP.	Goods manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
C. Darflinger & Sons, ...	Glass blowing and cutting, .	336	14	. .	24	Good,	Feb. 28,	Comply with sections 2 and 3, ...	Complied.

ALLENTOWN.

F. C. Wolf & Co., ...	Ladies' shoes, ...	8	12	. .	. . .	Good,	Mar. 3.		
W. C. Ryan, ...	Paper boxes, ...	4	23	. .	2	do.	Mar. 3.		
Roney & Berger, ...	Ladies' and children's shoes,	24	19	. .	4	do.	Mar. 3.		
M. J. Connars, ...	Shirts, ...	. . . .	14	. .	. . .	do.	Mar. 3.		
Ruhe Bros., ...	Cigars.	40	60	. .	8	do.	Mar. 3.		
John M. Stevens, ...	Cigar boxes, ...	9	8	. .	4	do.	Mar. 3,	Comply with sections 2 and 3, ...	Complied.
H. Leh & Co., ...	Boots and shoes.	75	60	. .	16	do.	Mar. 3,	Comply with section 3, ...	Complied.
Bitner, Hunsecker & Co., ...	Hosiery, ...	2	43	. .	2	do.	Mar. 3,	Comply with section 3.	Complied.
Wolf Shoe Manufacturing Company,	Ladies' and children's shoes,	35	15	. .	3	do.	Mar. 4,	Comply with sections 2 and 3, ...	Complied.
Seaton & Barnes, ...	Silk throwing.	15	50	. .	15	do.	Mar. 4.		
Allentown Spinning Mill Company,	Jute, ...	230	250	3	185	do.	Mar. 4,	Comply with sections 2, 3 and 12, ...	Complied.
Hartung. Schneider & Co.	Ladies' and gents' shoes, . . .	51	16	. .	10	do.	Mar. 4.		
Adelaide Silk Mill, ...	Silk weaving, cloth and ribbons.	200	400	. .	30	do.	Mar. 4.		
Pioneer Silk Mill, ...	Silk yarns and ribbons, . . .	120	250	. .	168	do.	Mar. 4.		

John E. Lentz,	Boots and shoes,	100	40	..	9	do.	Mar. 5.		
Allentown Woolen Mill,	Knitting and weaving,	14	56	..	24	do.	Mar. 5.	Comply with sections 2 and 3.	Complied.
Lichter Bros.,	Cigars,	90	50	..	21	do.	Mar. 6,	Comply with sections 2 and 3,	Complied.
W. R. Lawser & Co.,	Hosiery,	2	10	1	6	do.	April 21,	Comply with sections 2 and 3,	Complied.
Wm. Walbert,	do.	1	29	1	5	do.	April 21,	Comply with sections 2 and 3,	Complied.
F. C. Wolf & Co.,	Boots and shoes,	20	15	..	6	do.	April 21,	Comply with sections 2 and 3,	Complied.

READING.

Curtis, Jones & Co..	Children's shoes,	55	25	..	8	Good,	Mar. 10.		
Pennsylvania Hardware Company.	Light hardware,	305	45	..	88	do.	Mar. 10.		
Pennsylvania Butt Works,	Butts,	95	....	..	13	do.	Mar. 11.		
Excelsior Laundry,	Laundry,	3	10	..	...	do.	Mar. 11.		
P. Rufe & Co..	Cigars,	45	30	..	13	do.	Mar. 11.		
Reading Cigar Box Company,	Cigar boxes,	16	14	..	...	do.	Mar. 11.		
Reading Cotton Mills,	Weaving and spinning,	75	200	..	72	do.	Mar. 11.		
Glaser, Frame & Co.,	Cigars.	86	93	..	38	do.	Mar. 11.		
W. H. Reinoehl & Co.,	Woolen hats,	37	15	..	3	do.	Mar. 11.		
Henry B. Hendel & Co.,	do.	87	33	..	4	do.	Mar. 12.		
D. F. Lotz & Co..	do.	26	10	..	3	do.	Mar. 12.		
Reading Hat Works,	do.	30	30	..	10	do.	Mar. 12.		
J. G. Mohn & Bros.,	do.	70	30	..	17	do.	Mar. 12.		
George W. Lehr.	Cigars,	10	12	..	...	do.	Mar. 12.		
R. H. Savage & Co.,	Woolen hats,	120	40	..	5	do.	Mar. 12.		
Herr & Koch.	Cigars,	32	27	..	18	do.	Mar. 12.		
Louis Weber & Co.,	Hosiery,	7	63	..	27	do.	Mar. 12,	Comply with sections 2 and 12,	Complied.
Hendel Bros., Sons & Co.,	Woolen hats,	110	40	..	20	do.	Mar. 13,	Comply with section 2,	Complied.

READING — *Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
John R. Miller & Co.	Woolen hats,	60	40	..	8	Good,	Mar. 13,	Comply with sections 2 and 12,	Complied.
Dibert Bros.	Cigars,	30	60	..	11	do.	Mar. 13,	Automatic doors to elevator,	Complied.
C. W. Hendel,	Fur hats,	70	40	..	...	do.	Mar. 13.		
Yocum Bros.,	Cigars,	90	60	..	2	do.	Mar. 13.		
Reading Hardware Company,	Builders' hardware,	648	27	..	151	do.	Mar. 13.		
George W. Frame,	Cigars,	50	50	..	13	do.	Mar. 13.		
J. C. Hunsicker & Co.,	Hosiery,	10	290	..	58	do.	Mar. 14.		
Reading Glass Works,	Glass bottles.	60	....	..	20	do.	Mar. 24,	Comply with section 2,	Complied.
Packeraek Paper Mill,	Paper,	30	20	..	...	do.	Mar. 24.		
Reading Paper Mill,	do.	30	20	..	...	do.	Mar. 24.		
Solomon Hirshland,	Pantaloons.	8	12	..	...	do.	Mar. 24.		
George W. Crouse & Son,	Cigars,	37	30	..	10	do.	Mar. 24.		
J. G. Linnbaeh & Co.,	Woolen goods,	35	28	..	18	do.	Mar. 25.		
Bayer & Heilig.	Cigars,	7	15	..	10	do.	Mar. 25.		
Reading Silk Mill,	Silk weaving,	25	175	..	76	do.	Mar. 25.		
J. Nolde & Co.,	Seamless hosiery,	8	150	..	56	do.	Mar. 25.		
W. C. Shantz,	Hosiery,	5	50	..	15	do.	Mar. 25,	Comply with seetion 2,	Complied.
Albert Thalheimer,	Cigar boxes,	27	22	..	6	do.	Mar. 25.		
Fisher & Poorman,	Cigars,	2	24	..	1	do.	Mar. 25.		
Danah & Co.,	do.	2	43	..	19	do.	Mar. 26.		

John R. Mast & Co.,	Cigars,	7	11	..	2	do.	Mar. 26.		
T. A. Wilson & Co.,	Spectacles and eye glasses,	60	100	..	...	do.	Mar. 26.		
Rick Bros.,	Builders' hardware,	135	....	..	28	do.	Mar. 26.		
J. S. Wisler & Co.,	Cigars,	9	29	..	3	do.	Mar. 26,	Comply with sections 2 and 3,	Complied.
Witman Bros.,	Hosiery,	4	61	..	26	do.	Mar. 26,	Comply with sections 2 and 3,	Complied.
F. S. Wertz & Co.,	Cracker bakery,	35	....	..	12	do.	Mar. 26,	Erect fire escape,	Complied.
J. Mould & Co.,	Dry goods,	20	20	..	3	do.	Mar. 27.		
Dives. Pomeroy & Stewart,	Dry goods and millinery,	76	56	..	22	do.	Mar. 27.		
Mount Penn Hosiery Mill,	Hosiery,	5	75	..	21	do.	Mar. 24,	Comply with sections 2 and 3.	
J. S. Shade,	Dry goods and notions,	14	8	..	4	do.	Mar. 27,	Comply with sections 2 and 3,	Complied.
Thomas Jackson & Son,	Rope and cordage,	71	55	..	51	do.	Mar. 31.		
A. J. Brumback,	Woolen and cotton goods.	36	13	..	9	do.	April 1.		
George Hendel Bros. & Sons,	Wool hats,	49	22	..	15	do.	April 2,	Comply with sections 2 and 3,	Complied.
Louis Kremer & Son,	Woolen and cotton goods,	49	13	..	12	do.	April 2.		
John J. Eshelman,	Cigars,	16	30	7	12	Bad,	April 2,	Comply with sections 1, 2, 3 and 10,	Complied.
Jacob Kersler,	Wool hats,	26	10	..	2	Good,	April 2,	Comply with sections 2, 3 and 12,	Complied.
Wyosmining Hosiery Mill,	Hosiery,	5	21	2	10	Bad,	April 2,	Comply with sections 1, 2, 3 and 10,	Complied.

ORWIGSBURG, SCHUYLKILL COUNTY.

A. E. Brown & Co.,	Children's and misses' shoes,	39	28	..	18	Good,	May 1,	Comply with sections 2 and 3,	Complied.
Orwigsburg Shoe Manufacturing Company.	do. do.	50	35	..	21	do.	May 1,	Comply with section 2,	Complied.
Folmer & Co.,	do. do.	21	12	..	2	do.	May 1.		
H. S. Albright & Co.,	do. do.	28	27	..	5	do.	May 1.		
Schoener & Co.,	do. do.	22	16	..	2	do.	May 1.		
Kepner, Scott & Co.,	do. do.	23	15						

STROUDSBURG, MONROE COUNTY.

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED. Males.	Females.	Under 12.	12 to 16.	Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
Stroudsburg Glass Works,	Bottles and jars,	90		2	12	Good,	April 24,	Comply with sections 2 and 3,	Complied.
Muehling, Johnson & Co.,	Knit goods and ladies' coats,	12	113		8	do.	April 24,	Comply with sections 2 and 3,	Complied.
Climax Demijohn Company,	Demijohn covers,	18	7		4	do.	April 24,		
Stroudsburg Woolen Mill,	Woolen goods,	85	25		5	do.	April 24,	Comply with sections 2 and 3,	Complied.
John C. Ryle & Co.,	Silk throwing,	50	150		115	do.	April 24,	Comply with sections 2 and 3,	Complied.

STATISTICS OF FACTORIES VISITED—DISTRICT No. 3.

ALLEGHENY CITY.

Union American Cigar Company,	Cigars,	225	245		68	Good,	Dec. 8,		
Wentz, Stewart & Anderson,	do.	112	103		18	do.	Dec. 9,		
M. Brilles & Co.,	do.	11	95		20	do.	Dec. 9,		
J. Collins,	do.	2	11		1	do.	Dec. 9,		
J. Wrigley,	Paper boxes,	5	25		9	do.	Dec. 29,		
Allegheny Steam Laundry,	Laundry and dyeing,	20	50			do.	Jan 2,		
Western Leather Company,	Inner soling,	7	56		10	do.	Jan. 6,	Guard elevator,	Complied.
Lutz Bros.,	Pickling and preserving,	20	20			do.	Jan. 6,	Guard elevator,	Complied.

U. S. Baking Company,	Cakes and crackers.	30	20	..	...	do.	Jan. 9,	Guard elevator,	Complied.
Hamilton, Lemon, Arnold & Co.,	Coffins and trimmings,	180	40	..	...	do.	Jan. 15,	Light ordered to be put in stairway,	Complied.
McKinney Manufactnring Co.,	Hinges, etc.,	106	59	..	50	do.	Jan. 15.		

HULTON.

Agnew & Co.,	Glass bottles,	100	....	..	33	Good,	Jan. 8.		

PITTSBURGH.

P. C. C. C.,	Clothing,	20	2	1	11	Good,	Dec. 5,	Comply with sections 2 and 3,	Order withdrawn.
H. J. Lynch.	Dry goods and notions,	14	13	..	1	do.	Dec. 10,	Comply with sections 2 and 3,	Complied.
Mrs. C. Weisser,	do. do.	20	20	..	3	do.	Dec. 10,	Place certificates on file,	Complied.
Rosenbaum & Co.,	Dry goods and millinery,	10	90	..	5	do.	Dec. 10		
Danzinger & Co.,	Millinery and notions,	13	174	..	20	do.	Dec. 10.		
Scott Bros.,	Toys, faney goods and notions.	7	10	..	...	Poor,	Dec. 11,	Water closet ordered,	Order withdrawn.
Biber & Easton,	Merchandise,	36	21	..	3	Good,	Dec. 11.		
Heintz Bro & Co.,	Pickling,	126	19	..	...	do.	Dec. 11.		
A. Walker & Son,	Paper boxes,	6	31	..	2	do.	Dec. 12.		
James M. Grove,	Notions,	32	12	..	...	do.	Dec. 12.		
Collins & Wright,	Britannia, brass and tin,	20	10	..	1	do.	Dec. 12.		
A. J. Logan,	Bedding and supplies,	33	12	..	...	do.	Dec. 12.		
George F. McDonald,	Confectionery,	15	20	..	...	do.	Dec. 12.		
Pittsburgh Paper Box Factory,	Paper boxes,	2	12	..	1	do.	Dec. 13,	Comply with sections 2 and 3,	Complied.
Sampliner & Rich,	Cloaks,	14	30	..	...	do.	Dec. 15.		
Klee & Talk,	Pantaloons,	8	60	..	...	do.	Dec. 15.		

PITTSBURGH—*Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Joseph Kiees' Sons,	Pantaloons,	10	65	..	...	Good,	Dec. 15.		
Guskey's,	Gent's furnishing goods,	220	5	..	20	do.	Dec. 16.		
Kaufman's,	General store,	215	60	..	41	do.	Dec. 16.		
A. G. Campbell's Sons,	Notions,	6	35	..	5	do.	Dec. 18.		
Knable & Shuster.	Dry goods,	14	18	..	5	do.	Dec. 18.		
Fleishman & Co.,	Merchandise,	30	200	..	65	do.	Dec. 18.		
McClintock & Co.,	Carpets and curtains,	104	21	..	2	do.	Dec. 19.		
Booard, Rose & Co.,	Carpets,	51	10	..	...	do.	Dec. 19.		
Kaufman & Sons,	Pantaloons,	15	85	..	...	do.	Dec. 22.		
M. Oppenheimer,	do.	....	30	..	...	do.	Dec. 22.		
Barnes Bros.,	Laundry,	28	60	..	4	do.	Dec. 23.		
Keystone Laundry,	do.	10	28	..	3	do.	Dec. 23.		
Rankin & Holdship,	Tinware,	10	30	..	...	do.	Dec. 23.		
Mohn Bros.,	Laundry,	15	60	..	...	do.	Dec. 23.		
K. Cruikshank,	Preserves and jellies,	16	8	..	...	do.	Dec. 24.		
Gable & Lomask,	Cigars,	15	15	..	3	do.	Dec. 30,	Comply with sections 2 and 3,	Complied.
Pittsburgh Steam Laundry,	Laundry and dyeing,	11	14	..	1	do.	Dec. 30.		
East End Steam Laundry,	do. do.	12	18	..	...	do.	Dec. 30.		
Joseph Horne & Co.,	Dry goods,	125	200	..	70	do.	Jan. 5.		
E. Groetzinger,	Carpets,	20	17	..	...	do.	Jan. 6.	Guard elevator,	Complied.

Pennsylvania Paper Box Company,	Paper boxes,	9	27		12	do.	Jan. 6,	Guard elevator,	Complied.
H. J. Heintz & Co.	Pickling and Preserving,	260	240		61	do.	Jan. 6.		
L. Free & Bro.,	Cigars,	23	17			do.	Jan. 6,	Guard elevator,	Complied.
Joseph Eichbaum & Co.,	Printing and binding,	65	30		7	do.	Jan. 7,	Guard elevator,	Complied.
Horne & Ward,	Millinery and fancy dry goods.	46	47		8	do.	Jan. 7,	Guard elevator,	Complied.
W. P. Bennett,	Printing and binding,	24	16			do.	Jan. 7,	Erect fire escape,	Complied.
Stevenson & Foster,	do. do.	44	14		6	do.	Jan. 7,	Guard elevator,	Complied.
Pennsylvania Cotton Mill,	Cotton goods,	67	223		68	do.	Jan. 12.		
Dillworth Bros.,	Roasting and packing coffee,	14	30			do.	Jan. 13.		
R. & W. Jenkinson,	Cigars,	15	45		1	do.	Jan. 13,	Comply with sections 7 and 12,	Complied.
J. H. Kunkel & Bro.,	Dry goods and notions,	2	9			do.	Jan. 13.		
Will Price,	Shirts,		12			do.	Jan. 13,	Erect fire escape,	Complied.
Reymer Bros.,	Confectionery,	51	29			do.	Jan. 14.		
James McClurg & Co.,	do.	34	16		1	do.	Jan. 14,	Guard elevator,	Complied.
Arbuckle & Co.,	Roasting and packing coffee,	10	30			do.	Jan. 14,	Guard elevator.	
M. Wagman,	Cigars,	15	14		4	do.	Jan. 16.		
Harry Mozerskey,	do.	9	9		2	do.	Jan. 16.		
E. Meginn,	Crackers and confectionery,	20	20			do.	Jan. 17,	Place hand rails on stairs and guard elevator.	Complied.
Mrs. M. Joyce,	Dry goods and millinery,	1	18			do.	Jan. 19.		
James McClure & Co.,	Crackers,	25	20		1	do.	Jan. 21,	Guard elevator,	Complied.
Conroy, Prugh & Co.,	Mirrors,	26	24		9	do.	Jan. 21,	Guard elevator,	Complied.
C. J. Stein,	Cigars,	7	13			do.	Jan. 22.		
Star Encaustic Tile Company,	Flooring tile,	16	22		2	do.	Jan. 22.		
Marvin Branch U. S. Company,	Bakery,	125	175		48	do.	Jan. 23,	Guard elevator,	Complied.

PHILLIPSBURG.

Phœnix Glass Company,	Fine glasssware,	381	59		69	Good,	Dec. 2.		

ROCHESTER, BEAVER COUNTY.

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Rochester Tumbler Works,	Glassware,	522	98	..	101	Good,	Dec. 2.		
Point Bottle Works,	Glass bottles,	96	1	3	15	do.	Dec. 2,	Dismiss three children under twelve years,	Complied.

GREENSBURG, WESTMORELAND COUNTY.

Greensburg Glass Company,	Glass table ware,	115	10	5	24	Fair,	Dec. 17,	Comply with sections 1, 2, 3, 9 and 10, ..	Complied.
Kelley and Jones Company,	Iron and brass goods and fittings.	300	....	..	15	Good,	Dec. 17,	Comply with sections 1, 2, 3, 8 and 9. ..	Complied.
Gillinder & Sons,	Glassware,	161	19	5	42	do.	Dec. 17,	Comply with sections 1. 2, 3, 9 and 10, ..	Complied.
Greensburg Glass Company,	Table ware, lamps, etc., ..	120	15	..	26	do.	May 6.		
Kelley and Jones Company,	Iron and brass goods, ...	200	....	..	14	do.	May 6.		
Gillinder & Sons,	Glassware,	184	16	..	44	do.	May 6,	Comply with section 7,	Complied.
Hotchkiss Nut and Bolt Company,	Bolts and nuts,	38	3	..	17	Fair,	May 6,	Comply with sections 1, 2. 3 and 10, ...	Complied.

ALLEGHENY CITY.

Union-American Cigar Company,	Cigars,	27	251	..	104	Good,	Feb. 12.		
McKinney Manufacturing Company,	Hinges,	130	50	..	43	do.	Feb. 13.		

Lindsey & McCutcheon,	do.	86	....	..	37	do.	Feb. 13.	
H. J. Heintz & Co.,	Pickling and preserving,	220	250	..	60	do.	Feb. 27.	
Baker Chain Works,	Chains and wagon hardware,	325	....	..	71	do.	Feb. 27.	Comply with sections 7 and 8, ... Complied.
Maginn Cracker Factory,	Crackers and confectionery,	35	40	..	...	do.	Mar. 5.	
Anchor Stogie and Cigar Company,	Stogies and cigars,	5	155	..	35	do.	Mar. 5.	
M. Brilles & Co.,	Cigars,	15	110	..	18	do.	Mar. 6.	
Penn Cotton Mill,	Cotton cloth,	77	173	..	60	do.	Mar. 31.	
Herd Branch U. S. Bakery Co.,	Bakery,	30	20	..	...	do.	April 7.	
Conroy & Prugh,	Bevel glass mirrors,	24	25	..	14	do.	April 7.	
Jas. McClurg & Co.,	Bakery,	23	19	..	...	do.	April 9.	
Schimmel Preserving Company,	Pickles and preserves,	20	10	..	...	do.	April 9.	
Lutz Bros.,	do. do.	20	20	..	...	do.	April 11.	
Western Leather Company,	Inner soles, heeling, etc.,	5	50	..	12	do.	April 11.	
Walker Soap Works,	Bath and laundry soap,	57	23	..	1	do.	April 14,	Comply with section 7, ... Complied.
J. Wrigly,	Paper boxes,	5	25	..	10	do.	April 14.	
Allegheny Steam Laundry,	Laundry,	9	41	..	...	do.	April 27.	
Keystone Laundry,	do.	5	25	..	...	do.	April 27.	
Liggett Spring and Axle Company,	Vehicle springs and axles,	265	....	..	19	do.	April 27.	
Rankin & Holdship,	Tinware, etc.,	25	13	..	...	do.	April 28,	Guard elevators, ... Complied.
Hamilton, Lemon, Arnold & Co.,	Coffins, caskets and trimmings,	178	58	..	20	do.	April 28.	Comply with sections 2 and 3, ... Complied.
T. M. Lattimer,	Dry goods, etc.,	25	25	..	4	do.	April 30.	
Union Malleable Iron Company,	Malleable hammers, hardware, etc.	105	....	..	24	do.	April 30.	
Boggs & Buhl,	Dry goods and fancy goods,	140	140	..	35	do.	May 8,	Comply with section 7, ... Complied.
Anchor Stogie and Cigar Works,	Tobies and cigars,	8	157	..	37	do.	May 11.	
Baker Chain Works,	Chains and wagon hardware,	270	....	..	70	do.	May 12.	
Union-American Cigar Company,	Cigars,	19	260	..	131	do.	May 12,	Comply with section 7, ... Complied.
Pittsburgh Baking and Pretzel Co.,	Bakery,	3	11	..	1	Fair,	May 15,	Comply with sections 7 and 10, ... Complied.
Douglass & Mackie,	Dry goods,	13	27	..	9	Good,	May 15.	

ALLEGHENY CITY—*Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of Inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
H. J. Heintz Company, ...	Pickling and preserving, . . .	185	215	. .	55	Good,	May 18.		
McKinney Manufacturing Company,	Hinges, ...	150	50	. .	80	do.	May 19.		
Pittsburgh Brass Company.	Brass and nickel lamps, . .	175	. . . .	. .	30	do.	May 21,	Provide automatic safeguards to two upper landings of elevator.	Complied.
Conroy & Prugh, ...	Mirrors, etc., ...	34	33	. .	21	do.	May 25,	Gate to elevator, and comply with sections 2 and 3.	Complied.
U. S. Baking Company, ...	Bakery, ...	30	20	. .	. . .	do.	May 26,	Gates to elevator, ...	Complied.
U. S. Baking Company, ...	do.	23	19	. .	. . .	do.	May 26,	Gates to elevator, ...	Complied.
Schimmel Preserving Company, . .	Pickles, preserves, etc., . . .	20	10	. .	1	do.	May 26,	Gates to elevator, ...	Complied.
M. Brilles & Co., ...	Cigars and tobies, ...	110	108	. .	23	do.	May 27.		

PITTSBURGH.

Pennsylvania Tube Company, . . .	Wrought iron pipes, ...	850	. . .	. .	22	Good,	Dec. 5.		
Carnegie, Phipps & Co..	Iron and steel, ...	1,600	. . . .	. .	38	do.	Dec. 5.		
Pittsburgh Manufacturing Co., . .	Bolts and nuts, ...	75	. . . .	. .	9	do	Dec. 11,	Keep record book, ...	Complied.
Wm. Clark's Sons & Co., ...	Iron and steel, ...	500	. . . .	. .	30	do.	Dec. 11.		
Westinghouse Electric Company, .	Electrical apparatus, ...	910	40	. .	12	do.	Dec. 12.		
McConway and Forley Company, .	Malleable iron castings, . . .	583	17	. .	. . .	do.	Jan. 7.		

Crescent Steel Works,	Iron and steel,	550	....	..	12	do.	Jan. 6.		
Shiffler Bridge Company,	Iron bridges,	145	....	..	...	do.	Jan. 7.		
Black Diamond Steel Works,	Steel and copper,	2,100	....	..	...	do.	Jan. 13.		
Pennsylvania Tube Company,	Wrought iron pipes,	880	....	..	19	do.	Jan. 16,	Comply with section 8,	Complied.
Soho Copper Works,	Sheet copper and brass,	90	....	..	11	do.	Feb. 5.		
Wm. McCully & Co.,	Glass bottles,	111	....	..	59	do.	Feb. 6.		
Wm. McCully & Co.,	do.	56	....	..	29	do.	Feb. 6.		
Wm. McCully & Co.,	do.	150	....	..	55	do.	Feb. 6.		
Lower Union Mill,	Iron,	1,000	....	..	15	do.	Feb. 7,	Comply with sections 8, 9 and 12,	Complied.
Carnegie, Phipps & Co.,	Iron and steel,	1,500	....	..	34	do.	Feb. 11.	Guard gearing on both sides,	Complied.
Collins Cigar Company,	Cigars,	8	242	..	127	do.	Feb. 12,	Comply with section 7,	Complied.
W. H. Hamilton & Co.,	Bottles,	284	....	..	99	do.	Feb. 13.		
Fleming & Hamilton,	Tin and japanned ware,	59	41	..	69	do.	Feb. 16.		
Eclipse Glass Works,	Window glass and bottles,	160	....	..	50	do.	Feb. 17.		
J. T. & A. Hamilton.	Glass bottles,	213	....	..	87	do.	Mar. 2.		
Star Brick Works,	Fire brick and tile,	200	....	..	63	do.	Mar. 2.		
S. Jarvis, Adams & Co..	Foundry,	132	....	..	12	do.	Mar. 2.		
Pittsburgh Tube Works,	Wrought iron pipes,	500	....	..	24	do.	Mar. 3.		
Point Bridge Bottle Works.	Bottles,	150	....	..	23	do.	Mar. 5.		
James McClurg & Co.,	Confectionery,	24	16	..	...	do.	Mar. 6.		
Armstrong Bros. & Co.,	Corks,	367	600	..	148	do.	Mar. 9.		
James McKay & Co.,	Chains,	55	....	..	13	do.	Mar. 9.		
W. N. Matchneer Box Factory,	Paper and wood cigar boxes,	16	14	..	5	do.	Mar. 30.		
E. Groetzinger,	Carpets, etc.,	35	25	..	...	do.	Mar. 30.		
Horne & Ward.	Dry goods, trimmings, etc.,	29	75	..	9	do.	Mar. 30.		
W. P. Bennett,	Blank books and printing,	20	18	..	...	do.	Mar. 30,	Erect fire escape,	Complied.
Moorhead-McClean Company,	Iron, steel, etc.,	1,100	....	..	10	do.	April 1,	Comply with sections 1, 2 and 3,	Complied.
A. Walker's Son,	Paper bags and boxes,	13	32	..	8	do.	April 3,	Guard elevator.	Complied.
Pittsburgh Paper Box Company	Paper boxes,	2	12	..	...	do.	April .		

PITTSBURGH — *Continued.*

NAMES OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Penn Paper Box Company.	Paper boxes, ...	8	22	. .	12	Good,	April 3.		
Star Encaustic Tile Company, . . .	Flooring tile, ...	17	22	. .	4	do.	April 7.		
Joseph Kleis' Sons & Co., ...	Pantaloons, ...	10	60	. .	2	do.	April 8.		
Klee & Talk, ...	do.	10	65	. .	1	do.	April 8.		
R. & W. Jenkinson, ...	Cigars, ...	70	80	. .	2	do.	April 9.		
Louis Free & Bro., ...	do.	13	10	. .	. . .	do.	April 9.		
Owen & Co., ...	do.	5	23	. .	5	do.	April 9.		
Rex Box Factory, ...	Wood and paper cigar boxes,	20	35	. .	11	do.	April 10.		
S. S. Marvin, U. S. Baking Co., . .	Bakery, ...	150	200	. .	28	do.	April 10.		
Jos. Horne & Co., ...	Dry goods, etc., ...	240	159	. .	66	do.	April 8,	Comply with section 11, ...	Complied.
Arbuckles' Coffee House, ...	Roasting and packing coffee,	15	25	. .	. . .	do.	April 13.		
Keymer & Bro., ...	Confectionery, ...	31	38	. .	. . .	do.	April 17,	Guard elevator, ...	Complied.
Geo. F. McDonald, ...	do.	18	18	. .	. . .	do.	April 17.		
Collins & Wright.	Britannia. tin and plated ware.	20	10	.	1	do.	April 17.		
S. Kaufman & Sons, ...	Pantaloons, ...	10	90	. .	. . .	do.	April 17.		
Doyle & Co., ...	Glass table ware, ...	115	10	. .	41	do.	April 20.		
Excelsior Flint Glass Company, . .	Chimneys, etc., ...	156	4	. .	18	do.	April 22.		
C. J. Stein, ...	Tobies and cigars, ...	10	10	. .	1	do.	April 22.		
Dunlap & Co..	Tinware and japanned ware,	42	36	. .	. . .	do.	April 22.		
Fleishman & Co., ...	Fancy goods and furnishings,	30	100	. .	27	do.	April 23.		

Rosenbaum & Co.,	Millinery and fancy goods,	20	80	4	do.	April 23.			
Danzinger & Co.,	Fancy goods and furnishings,	15	160	15	do.	April 23.			
Penn Tube Works,	Wrought iron pipes.	800		19	do.	April 23.			
Mohn Bros.,	Laundrying.	5	55	1	do.	April 24,	Place gates to elevator,	Complied.	
Stevenson & Foster,	Blank books and printing,	41	11		do.	April 24.			
A. J. Logan & Co.,	Mattresses and bedding,	27	13		do.	April 24.			
Banar & Wieland,	Corks and bungs,	16	27	3	do.	April 25.			
Troy Laundry,	Laundry,	40	50	6	do.	April 28.			
Wormser Glass Company,	Bottles and jars,	58	2	30	do.	April 29.			
Soho Copper Works,	Copper, brass, etc..	90		13	do.	April 29.			
Carnegie, Phipps & Co..	Iron and steel,	1,400		34	do.	April 30.			
Mrs. C. Weiner,	Dry goods,	7	35	4	do.	April 30.			
Lower Union Mill,	Iron,	900		14	do.	April 30.			
Pittsburgh Tube Works,	Wrought iron pipes.	500		25	do.	May 1.			
Alex. Matchett & Son,	Paper boxes,	3	12	3	Bad,	May 8,	Provide closet for women and erect fire escape.	Complied,	
J. A. Irwin,	Book bindery.	10	12		Good,	May 8.			
Solar Iron Works,	Iron and steel,	500		20	do.	May 12.			
W. G. Johnson,	Book bindery, etc.,	70	30	4	do.	May 13.			
Guskey's,	Clothing and gents' furnishing store.	286	14	22	do.	May 13.			
Fleming & Hamilton,	Tin and japanned ware,	60	40	54	do.	May 13,	Comply with section 12,	Complied,	
Tibby Bros.,	Prescription flint glass bottles,	250		47	do.	May 14.			
Dillworth Bros.,	Coffee roasting and packing,	15	20		do.	May 11.			
M. Oppenheimer.	Gents' clothing,	15	50		do.	May 15.			
Hostetter Company,	Bitters,	20	40		do.	May 15	Comply with section 7,	Complied,	
J. Kaufman & Bro..	Clothing, etc.,	200	100	54	do.	May 18.			
B. Himmelrich Sons.	Shoes,	19	14	2	do.	May 18.			
Pearl Laundry Company,	Laundry,	15	35	2	do.	May 20.			
Penn Paper Box Company,	Paper boxes,	10	22	12	do.	May 20,	Gate to elevator,	Complied.	

PITTSBURGH—*Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
W. N. Matchneir,	Paper and wood boxes,	18	15	. .	3	Good,	May 20,	Guard elevator,	Complied.
J. Painter, Sons & Co.,	Iron,	1,000	. . . .	. .	12	do.	May 21.		
Eclipse Glass Works.	Bottles,	160	. . . .	. .	23	do.	May 21.		
Point Bridge Bottle Works	do.	150	. . . .	. .	29	do.	May 21,	Comply with sections 2 and 3,	Complied.
O'Hara Glass Company,	Tableware (glass),	285	15	. .	45	do.	May 22.		
J. T. & A. Hamilton,	Glass bottles,	214	. . . .	. .	87	do.	May 22.		
Heitz Bros. Company,	Pickels,	12	22	. .	4	do.	May 23,	Guard elevator,	Complied,
Alex. Matchett Sons,	Paper box factory,	2	14	. .	5	do.	May 27,	Erect fire escape,	Complied.

PITTSBURGH, SOUTH SIDE.

George A. Macbeth & Co.,	Glass chimneys,	514	25	. .	48	Good,	Dec. 1.		
Chess, Cook & Co.,	Tacks and nails,	246	43	. .	10	do.	Dec. 4.		
Ripley Glass Company.	Glass tableware.	150	4	. .	13	do.	Dec. 4.		
Oliver Bros. & Co.,	Wire, nuts, bolts, etc.,	280	160	. .	58	do.	Dec. 10.		
Dillworth, Porter & Co.,	Railroad and boat spikes.	500	. . . .	. .	23	do.	Jan. 9.		
Peerless Lead Glass Works,	Chimneys, globes, etc.,	244	23	. .	27	do.	Feb. 7.		
The Ihmsen Glass Company,	Bottles and jars,	188	. . . .	. .	24	do.	Feb. 11.		
Scutt & Co.,	Barbed wire and wire nails.	55	185	. .	40	do.	Feb. 11.		

American Iron and Steel Works, .	Iron and steel, ...	3,600	. . . .	. .	120	do.	Feb. 17.		
George A. Macbeth & Co., ...	Glass chimneys, ...	440	40	. .	46	do.	Mar. 3.		
Doyle & Co., ...	Glass specialties, ...	111	9	. .	30	do.	Mar. 3.		
Oliver Iron and Steel Company. . .	Steel, nuts, bolts. etc., . . .	2,086	114	. .	45	do.	Mar. 3.		
Cunningham & Co., ...	Glass bottles, ...	125	. . . .	. .	29	do.	Mar. 4,		
D. C. Cunningham.	Bottles and jars, ...	100	. . . .	. .	52	do.	Mar. 4,	Comply with sections 2 and 3, ...	Complied.
Thomas Evans & Co., ...	Glass chimneys, ...	213	12	. .	68	do.	April 6.		
King Glass Company, ...	Glass tableware, ...	219	22	. .	40	do.	April 6.		
The Ihmsen Glass Company, ...	Green glass bottles, ...	180	. . . .	. .	26	do.	April 14.		
Adams Glass Company, ...	Glass tableware, ...	195	45	. .	30	do.	April 14.		
Sligo Rolling Mill.	Iron and steel.	525	. . . .	. .	10	do.	April 16.		
Bryce Bros., ...	Glass tableware, ...	315	10	. .	60	do.	April 20.		
Scott & Co., ...	Barbed wire, ...	175	180	. .	32	do.	April 23.		
A. M. Bryce & Co., ...	Tube mill, ...	300	. . . .	. .	40	do.	April 24,	Comply with sections 1. 2, 3 and 9, ...	Complied.
Hogan, Evans & Co., ...	Glass chimneys, ...	267	8	. .	42	do.	April 29.		
George Duncan & Sons, ...	Glass tableware, ...	260	40	. .	76	do.	May 1.		

JEANNETTE.

Fort Pitt Glass Works, ...	Glassware. lamps, etc.	510	40	. .	66	Good,	Dec. 18.	Comply with sections 1, 2, 3, 9, 10 and 11, .	Complied.
McKee & Bros., ...	Flint glassware, ...	555	45	. .	41	Bad,	May 7,	Comply with sections 10 and 12, ...	Complied.
Fort Pitt Glass Works, ...	Glassware, lamps, etc.	376	24	. .	26	Good,	May 7.		

TARENTUM.

Pittsburgh Plate Glass Company, .	Plate glass, ...	590	10	. .	23	Good,	April 15.		
C. L. Flaccus, ...	Prescription flint bottles. . .	350	. . . .	. .	89	do.	April 15.		
Challinor and Taylor Glass Co., . .	Tableware and specialties, .	210	92	. .	81	do.	April 15.		
Richard & Hartley, ...	Glassware, ...	155	20	. .	20	do.	April 15.		
Godfrey & Clark, ...	Paper and paper sacks, . . .	62	38	. .	11	do.	May 14,	Comply with sections 9 and 12.	Complied.

GRAPEVILLE, WESTMORELAND COUNTY.

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED. Males.	Females.	Under 12.	12 to 16.	Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
Westmoreland Specialty Company,	Glassware specialties, ...	190	60	. .	25	Good,	Dec. 18,	Comply with sections 1, 2, 3, 9 and 10.	
Westmoreland Specialty Company,	Glassware specialties, ...	150	30	. .	11	do.	May 7.		

NATRONA.

Pennsylvania Salt Works, ...	Soda, salts and chemicals, . .	700	. . . .	. .	52	Good,	April 15.		

BRADDOCK.

Braddock Wire Company, ...	Wire and wire nails, ...	558	2	. .	12	Good,	Dec. 19,	Comply with sections 1, 2, 3, 8, 9 and 10, .	Complied.
Braddock Glass Company, ...	Chimneys, bottles, etc., . . .	174	1	. .	30	Poor,	Dec. 19,	Comply with sections 1, 2, 3, 9 and 10.	
Edgar Thompson Steel Works, . .	Steel rails, blooms, etc., . .	3,500	. . . .	. .	44	Good,	May 5.		
Braddock Glass Company.	Glass chimneys, ...	125	. . . .	. .	. . .	do.	May 5.		

HOMESTEAD.

Windsor Glass Works.	Glass tableware, ...	142	8	1	32	Fair,	Jan. 9,	Comply with sections 1, 2, 3, 9 and 10, . .	Complied.

OLIVER.

Allegheny Bessemer Steel Company.	Rails, billets, etc.,	700			18	Good.			

RANKIN.

Braddock Wire Company,	Wire, iron rods, etc.,	557	3		11	Good,	May 5.		

COCHRAN STATION.

Howard Plate Glass Company,	Plate glass,	365	10		18	Good,	Jan. 9.		

ALTOONA.

Altoona Silk Mill,	Silk thread, etc.,	53	70		55	Bad,		Comply with sections 10 and 12,	Complied.

ERIE.

Erie Malleable Iron Company,	Malleable iron castings,	262			21	Good.	Jan. 30.		
T. T. Adams Company,	Wringers, novelties, etc.,	85			15	do.	Jan. 30.		
Watson's Paper Mill,	Coarse paper,	224	11		5	do.	Mar. 11.		
Downing Carriage Company,	Children's carriages,	45	30		10	do.	Mar. 11.		
Lorell Manufacturing Company,	Wringers, animal traps, etc.,	90			22	do.	Mar. 11.		
Jaracki Manufacturing Company,	Malleable iron castings,	711			44	do.	Mar. 11.		
Maner Confectionery Company,	Candy and crackers,	25	20		3	do.	Mar. 12.		

ERIE—*Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Union Rag Company, ...	Sorting paper stock, etc., . .	10	20	. .	. . .	Good,	Mar. 24.		
Boston Store, ...	Dry goods, ...	15	25	. .	7	do.	Mar. 24.		
Trask, Prescott & Richardson, . . .	do.	26	34	. .	3	do.	Mar. 24.		
Erie City Iron Works.	Boilers and engines, ...	600	. . . .	. .	16	do.	Mar. 24,	Comply with section 8, ...	Complied.

ETNA.

Spang, Chalfant & Co , ...	Wrought iron tubes and pipes,	1,000	. . . .	. .	110	Good,	May 19.		

MUNHALL.

Homestead Steel Works, ...	Steel, ...	3,000	. . . .	. .	64	Good,	Jan. 12,	Comply with section 8, ...	Complied.

McKEESPORT.

National Tube Works Company, . .	Iron pipes, etc., ...	5,500	. . . .	. .	134	Good,	Jan. 14.		

VERNER STATION.

Pittsburgh Forge and Iron Company,	Iron drop forging, etc., . . .	600	. . . .	. .	22				

FORD CITY.

Pittsburgh Plate Glass Company, .	Plate glass, ...	696	4	. .	36	Good.			

CREIGHTON.

Pittsburgh Plate Glass Company, .	Plate glass, ...	488	12	. .	26	Good.			

KITTANNING, ARMSTRONG COUNTY.

Wick China Company, ...	White and decorated china,	105	. . . .	55	11	Good,	Mar. 27,	Designate water closets and comply with section 3.	Complied.

PARKER'S LANDING, ARMSTRONG COUNTY.

Parker's Glass Works, ...	Glass bottles, ...	94	. . . .	3	29	Good,	Mar. 26,	Comply with sections 2 and 3, ...	Complied.

DEPARTMENT OF FACTORY INSPECTOR.
HARRISBURG, PA., *December 1, 1891.*

HON. ALBERT S. BOLLES,

Chief of the Bureau of Industrial Statistics, Harrisburg, Pa.:

DEAR SIR: In accordance with section five of the act to regulate the employment of women, children, etc., approved May 20, 1889, I herewith submit to you my report from June 1, 1891, to November 30, 1891.

The short space of time which I am called upon to report, prevents me from making anything like a very lengthy list of recommendations, inasmuch as it has been impossible for me to make special inquiries into the workings of the act, except in a limited manner and covering only a very small area compared with the whole of the commonwealth, and as I very much prefer to be specific in a few things that are known to exist, rather than to deal with presumably general wrongs, etc., my report will be necessarily brief.

On June 1st I entered upon the duties of Chief Factory Inspector, and at once called the deputies to headquarters, making out by their aid and suggestions a plan for systematic inspections. Mr. Wesley S. Godfrey of Philadelphia tendered his resignation and absented himself from the above named meeting. On July 1st I appointed Mr. George J. McCrane of Philadelphia, to fill the vacancy caused by Mr. Godfrey's resignation, also Benjamin T. Castles of Scranton to fill the place of John F. Little of Lancaster.

I am convinced that the present districting of the state under this department does not yield the best results, and I propose, very shortly, re-districting the same, and assigning one deputy to one district. Three deputies in one county (Philadelphia) and two for the remainder of the state is surely not conducive to the "greatest good to the greatest number." Hitherto I have been unable to make the necessary change owing to cases which are being prosecuted, and which would be interfered with in the event of such changes as I have deemed essential to the success of the department.

The following sections of the factory act need amending, so as to make them less vague, or more definite:

HOURS OF LABOR.

Section one should be amended so as to read for a longer period of ten hours per diem, or sixty hours per week.

The very origin of the act was the sufferings of the children who were compelled to work (whenever it suited unscrupulous employers) from twelve to sixteen hours per day, and yet section one does not wholly

prevent the employment of children for more than ten hours per day. If from accident or any other cause, a mill or factory is prevented from working on Monday, or indeed any day before Saturday, an employer may compel his employes to work an unlimited number of hours. Suppose the mill cannot work on Monday, the superintendent may post a notice on Tuesday morning to the effect that "The mill will work twelve hours per diem for the remainder of the week." There ought not to be any such latitude given, and I therefore urge that the section be amended as stated above, with the sincere hope that it will be forever impossible for any one in Pennsylvania's domain, to attempt to satisfy his thirst for wealth at the expense of the weary little limbs of the children that tend the looms and spindles, and aid the modern machines in doing the work their fathers performed a decade or so ago.

SATURDAY HALF HOLIDAY.

A very important change is required for Saturday, and the section should be made to read as a whole as follows:

"*Be it enacted, etc.*, That no minor shall be employed at labor in any factory, or manufacturing establishment, or mercantile house, or store, or in any laundry, or any place where minors are employed, for a longer period than ten hours per diem, on any one day in the week, and not more than six hours on Saturday."

The change on Saturday is a rather radical one, but it is very necessary, for so great is the desire for a Saturday short day, that in very many places, fifteen or thirty minutes are added to the first five days, and special requests for the shortening of the meal time each day, in order that fifty-four, or fifty-five hours may be worked at the conclusion of Friday's work.

Ten hours and a half work for five days in the week with a hurried lunch at noon instead of a reasonable meal time, cannot fail to sap the life and vitality out of the children of tender years (who are to be found in battalions in every manufacturing center of the state), and lay a foundation for a puny race rather than one of stalwart strength of body and intelligence of mind.

AGE OF EMPLOYMENT.

I recommend the changing of section two by striking out the fourth word of said section, and the insertion of the word "fourteen" in place thereof. We have an army of children under sixteen years of age, numbering 20,693 employed, and it is a very frequent experience of the Inspector and his deputies, to find children at work, whose infantile lips fairly lisp in answer to the questions we propound to them while prosecuting our duties; there is nothing about them to indicate that they are

"twelve" except the affidavit furnished by their parents to that effect. An army of infants at our looms that ought to be in our schools is surely a matter that calls for the most earnest attention of all who love the state.

LAUNDRIES.

The words "laundry," or "places where minors and females are employed," should be inserted in section three, and in every clause where the words manufacturing and mercantile establishments occur, for surely if protection is needed for women any where it is in the laundries.

REMOVING DISCRIMINATIONS.

Section four should be abolished entirely, for by its operation unscrupulous employers shirk all responsibility, by reducing (wherever possible) their number of employes who are minors under sixteen years, and females to nine, and then defy the department.

Nine children, or nine women, may be subjected to any ill-treatment, drudgery and imposition with impunity. This is a wrong which needs prompt redress, and the strong arm of the law should follow little "Tommy" and "Johnny," "Alice" and "Mary" into the vile tenement factory, and throw its protecting circle round them there, as it does in the larger and more improved factory or workshops.

I have no hesitancy in declaring that the child who labors in a mill where hundreds of others are employed, fares better than the child who toils where less than ten are employed, and, therefore, in the interest of all such employes, and in the interest of genuine equality under the act, I urge the abolition of this section.

NOON-DAY MEAL IN MERCANTILE STORES.

In section eleven the word mercantile establishment was omitted which has worked to the detriment of the children in many mercantile houses, the proprietors of said places absolutely refusing to give forty-five minutes for meal time. Mercantile houses and laundries should be brought within the meaning of this act.

DEPARTMENT SALARIES AND EXPENSES.

Section fourteen should be amended so as to give the deputy factory Inspectors 1,200 dollars per annum, instead of 1,000 dollars. The nature of the work of the Inspectors together with its serious requirements, is such as to entitle them to more remuneration than the present act allows them. This section should also designate the amount of expenses for deputies, in order to avoid the inconvenience occasioned by an inadequate appropriation for the purpose. At present less than fifty dollars per month is allowed for expenses, an amount which is oftentimes inadequate for hotel expenses, to say nothing of other necessarily heavy expenses.

INCREASING THE FORCE OF THE DEPARTMENT.

Section thirteen should be made to provide for at least twelve deputies instead of six. Pennsylvania, with her vast manufacturing and mercantile industries, employs seven persons in the factory inspection department, while New York employs eighteen and Massachusetts thirty-three.

It is impossible to do justice to the work with but six deputies, one of whom is necessarily detained in the office, necessity the desire for an additional number of deputies.

FIRE ESCAPES.

Section twelve of the factory act makes it the duty of the Factory Inspector to require lawful fire escapes while the fire-escape law specifies certain parties whose duty it is to enforce the same. In this case the Factory Inspectors should either be required to report to the fire-escape commissioners, or the factory department should be given full authority to deal with fire escapes in all manufacturing and other establishments coming under the jurisdiction of the said factory department. It has occasionally happened that we have given orders for improved means of egress in case of fire (from various establishments) and while our orders were being carried out, some other authority would order something else.

The duties of the Factory Inspector should be more fully defined and should not conflict with the duties of any other state, county or municipal officials.

SEMI-MONTHLY PAY LAW.

On May 20, 1891, an act entitled an amendment to an act to provide for semi-monthly payments to wage-workers, etc. Section three of said act makes it the duty of the Factory Inspector and his deputies to enforce the provisions thereof. This additional work ought not to have been placed on this department while the force is so manifestly inadequate to perform the regular work of inspections. The work devolving upon us in this case is nearly wholly of a clerical nature, owing to the unsatisfactory workings of the act. Section one makes it obligatory on the part of the employes to *demand* their pay when it is due, and unless it is *demanded* an action against an employer who fails to pay according to the provisions of this act, a prosecution would be useless, and a demand on the part of the employes in many places culminates in the dismissal of those who demand it, while in others, the petitions are ignored unless a majority of all the employes jointly demand their pay.

The act should be further amended so as to make a semi-monthly pay compulsory without the request, petition, or demand of the wage-workers. Mine Inspectors should be required to enforce its provisions in their respective territories, and the Factory Inspectors should be required to enforce it only within their own jurisdiction.

During the six months for which I have the honor to make report the following summary of work has been accomplished:

SUMMARY OF WORK DONE BY THE FACTORY INSPECTOR'S DEPARTMENT FROM JUNE 1 TO NOVEMBER 30, 1891.

Number of deputy Inspectors on outside work,	5
Total number of inspections made,	948
Number of males employed where inspections have been made,	129, 582
Number of females employed where inspections have been made,	71, 983
Number between twelve and sixteen years of age employed where inspections have been made,	20, 693
Number of children under twelve years of age found employed and discharged,	3
Total number of employes in establishments that have been inspected,	201, 565
Total number of orders given,	452
As follows:—Fire escapes to be erected,	21
Elevators to be guarded,	35
Sanitary orders given,	70
Miscellaneous,	326
Orders reported complied with,	236
Number of accidents reported,	131
As follows:—Fatal,	20
Serious,	37
Less serious,	74

Mr. Little continued to serve under me one month, when Mr. B. T. Castles was appointed his successor July 1, 1891. Mr. Little's work is included in the above report.

It will be observed that some of the deputies have made more inspections than others, which is accounted for in a large measure by the nature of the territory assigned them, some have a compact district while others have a very sparsely settled territory.

Miss O'Reilly (deputy) spent a month in the western part of the state-all of which is included in Inspector Baker's reports for that month-they having traveled over the territory together with much advantage to the department.

The work noted in the above report has not been accomplished without much opposition, amounting at times to positive obstruction on the part of factory owners, but the utmost care has been taken to avoid useless and unnecessary legal strife, and to this end I addressed the following card to the manufacturers, owners of factories, employes, etc.:

To the manufacturers of Pennsylvania, owners, managers and employes of workshops, factories or other establishments coming under the jurisdiction of the Factory Inspection Department:

It is the earnest desire of this department to have all interested parties fully cognizant of this act and its provisions, and, therefore, with a view to the better enforcement of the same, a careful perusal of the acts herein published is requested.

The laws will be fully enforced, and in order that this may be done with the least possible friction, a speedy and voluntary compliance is earnestly requested, that less vigorous methods may not be necessary.

Very respectfully,

ROBERT WATCHORN,

Chief Inspector of Workshops and Factories of Pennsylvania.

Notwithstanding this, we have encountered many objections to our inspections on the part of factory owners, but up to date we have only taken action against one person, Mr. Hugh French, cotton and woolen waste manufacturer, Third and Cumberland streets, Philadelphia. On December 10, 1891, Mrs. Belle McEnery visited the factory at this place, and was so outrageously insulted and abused by Mr. French, that we deemed it proper to prosecute him and he was held for court in $600 bail. I will make known the result in my next report. The factory in question was in a shocking condition at the time of the arrest, and he has still refused to comply with our orders except in a single exceptional case.

The closets are situated in a back yard, a sort of a barricaded cow stable, and the employes (many of whom are women and girls) in order to use the same, have to come down several flights of stairs from a room heated to from seventy to ninety degrees and traverse a back yard, which is very often wet, muddy and unfit for passage, thus endangering the health of every one of the employes who must use said premises. In addition to the above, the only wash room he has provided is a solitary hydrant, in the same back yard, where scores of girls must take their turns to get a wash. On the whole the place is simply horrible, and "The air is full of hints of grief, trembling voices touched with pain." I hope to have him convicted in this case, and then to have the factory conducted according to law, for by correcting the abuses of the establishment at Third and Cumberland streets, Philadelphia, we shall be vastly improving the conditions of scores of women and children, and making it easier for thousands of others, and the state will certainly be the better for it, as no good can possibly come from a continuance of the methods and usages mentioned above. To permit it to go on and spread would shortly give the state cause to say:

"The thorns which I have reaped are of the tree I planted, they have torn me and I bleed, I should have known what fruit would spring from such a seed."

I must not conclude without doing justice to the employers who not only manifest a willingness to accept and comply with the factory act, but who cheerfully render us all the help in their power to make the act a success. There are too many to enumerate, but a few examples might be mentioned: Jones & Laughlin Iron and Steel Works, Pittsburgh; Edgar Thompson Iron and Steel Works, Braddock; Pennsylvania Railroad Machine Shops, Altoona; Harrisburg Silk Mill; Weymen Bros.' Tobacco Company, Pittsburgh John Wanamaker's Mercantile House, Philadelphia. There are many more worthy of mention and it is a source of great pleasure to me to be able to say that I believe, nay I boldly affirm that we have some of the finest factories in the whole world under the jurisdiction of this department, best equipped, best ventilated, most cleanly and healthy of any I have had the pleasure to see anywhere, and my experience has been gained in many states and several countries.

It is my ambition to have the many inferior death traps (called factories) imitate the worthy examples set by the firms now complying with the factory inspection law, as the work of inspecting factories so vitally concerns, either directly or indirectly, the whole people, it should meet with the cordial support of the general public and the cheerful compliance of all manufacturers and employers within the meaning of the act.

I have the honor to remain, yours very sincerly,

ROBERT WATCHORN,
Factory Inspector.

ACCIDENTS—FIRST DISTRICT.

Date of accident.	PERSON INJURED.	Age (years).	Establishment in which accident occurred.	Location.	Machine, etc., on which accident occurred.	Particulars and extent of injury.
June 22.	William Collins, Jr.,	18	Harrison Bros. & Co.,	Philadelphia,	Elevator,	Riding on a freight elevator contrary to orders; internal injuries.
June 23,	Sarah Finn.	15	George Campbell & Co.,	do.	Ventilating fan.	Put her hand against the fan while it was revolving to feel the cool air; loss of left hand.
June 24.	John Brown,	18	Thomas Henry & Son.	do.	Carding machine,	Doing work which he should not have been doing; fingers crushed.
June 25,	James McKay,	18	Wolfenden, Shore & Co.,	do.	do.	Arm caught between worker and cylinder; arm lacerated.
Oct. 16,	John McHenry,	16	George Campbell & Co.,	do.	Mule spinning head.	Caught between quadrant and pinion; loss of right hand.
June 11,	William Ellery,	14	McCallum & Sloan,	do.	Brussels loom machine.	Lost his footing and fell and was caught in the lever; toe slightly crushed.
June 11,	Lizzie O'Rouke.	14	do. do.	do.	Roving machine,	Carelessness; finger lacerated.
June 16,	Edward Loudigan.	18	Burnham, Williams & Co.,	do.		Broken leg, caused by a sheet of iron falling on it.
June 17,	F. Metric,		do. do.	do.		Wheel fell against him while rolling it; leg broken.
June 17.	James Graham,	14	William Mann Company.	do.	Gordon press,	Carelessness; loss of one finger.
June 18,	John McCarty.	16	James S. Cochran & Bro.,	do	Elevator.	Fell down elevator shaft; nervous shock.
June 23.	Jacob Goretsky.		Hoopes & Towsend.	do.	Punching machine.	Hand caught in machine; loss of thumb.
June 29,	William Barrett,	47	Burnham, Williams & Co.,	do.		Tearing down a partition; head cut and back injured.
May 18,	George Gaugh,	14	Barnes-Erb Laundry Company,	do.		Moving a machine not in use with an iron bar; little finger broken.
July 6.	John Stewart.	23	Hoopes & Towsend.	do.	Punching machine,	Carelessness; lost part of one finger.

ACCIDENTS—*Continued.*

Date of accident.	PERSON INJURED.	Age (years).	Establishment in which accident occurred.	Location.	Machine, etc., on which accident occurred.	Particulars and extent of injury.
July 7,	Michael Schneck,	20	Hoopes & Towsend,	Philadelphia,	Punching machine,	Carelessness; lost part of one finger.
July 9,	John Arls,	13	William Maun Company,	do.	Elevator,	Caught between door and post of elevator; died from his injuries.
July 13,	W. H. Mauger,	41	Barnes-Erb Laundry Company,	do.	Ironing machine,	Accidental; contusion of arm.
July 18,	Aug. Schimpt,	54	Burnham, Williams & Co.,	do.		Breaking of belt while hoisting sheet of steel; foot injured.
July 18,	John Corsgrove,	29	do. do.	do.		Belt broke while hoisting sheet of steel; first joint of finger cut off.
July 29,	John McGuire,	26	do. do.	do.		Lost his footing which caused a sheet of steel to fall on him; leg broken.
Aug. 7,	Mrs. Louise Flick,		Philip Doerr & Sons,	do.	Carpet loom,	Struck in ear by shuttle flying out of loom; extent of injury unknown.
Aug. 20,	Maggie Loughlin,	20	William F. Read,	do.		Had a fall; slight concussion of brain.
Sept. 9,	David Weston,	15	William Maun Company,	do.		Falling of an iron weight; back hurt.
Sept. 15,	Bernhard Koch,	73	S. B. & B. W. Fleisher,	do.	Wool scouring machine,	Started the machine with his right hand before he could get his left one out of danger; died from injuries.
Sept. 15,	Fred. Klumpp,	27	Hoopes & Towsend,	do.	Punching machine,	Carelessness; loss of part of one finger.
Sept. 18,	William Boote, Jr.,	16	Quaker City Dye Works,	do.	Belt,	Disobeying instructions; arm broken.
Sept. 19,	Adam Sautter,	26	Hoopes & Towsend,	do.	Punching machine,	Portions of scrap flew in his eye; left eye injured.
Sept. 21,	Jacob Miller,	35	do. do.	do.	do. do.	Carelessness; lost part of one finger.
Sept. 26,	Lizzie Carey,	20	E. H. Godshalk Company,	do.	Bobbin winder,	Caught finger in gear wheel; flesh wound.
Sept. 30,	Charles Hall,	47	Henry Disston & Sons,	do.	Elevator,	Caught between elevator and floor above; instantly killed.

Oct.	16,	Charles Markley,	14	Wright Bros. & Co.	do.	Elevator shaft,	Fell down elevator shaft: concussion of brain.
Oct.	19,	James Charlton,	53	Robert Mitcheson,	do.	Circular saw,	Hand cut by circular saw.
Oct.	21,	Joseph Schramm,	45	McNeely & Co.,	do.	Elevator shaft,	Leaning over elevator shaft and caught by elevator; scalp wound.
Oct.	23,	Katie Punchman,	19	Middendorf Bros.,	do.	Sewing machine.	Apron caught in shafting of machine; knee cap dislocated and flesh wound.
Oct.	24,	Laura Sullivan.		P. C. Thomson & Co.	do.		Fell down stairs; skull fractured.
Oct.	24,	Thomas Lawlor.	16	Erben, Search & Co.,	do.	Carding machine,	Hand caught in machine; flesh wound.
Oct.	31,	Annie O'Brien,	18	Laundry Supply Company,	do.	Mangling machine,	Hand burned by coming in contact with a heated cylinder.
Nov.	12,	Harry Murphy,	15	William Wood & Co.,	do.	Twisting frame,	Fell upon small gears causing a laceration of the flesh about the shoulder.
Nov.	23,	Frank Hazlett,	19	Hoopes & Towsend.	do.	Punching machine,	Piece of steel flew into his eye; lid of eye cut.
Nov.	28,	Daniel McGowen,	19	do. do,	do.	do. do.	Caught his finger under the punch; lost part of one finger.
July	10,	Lizzie Reese,	14	T. Kenworthy & Bro.	Manayunk,	Spinning frame,	Cleaning machine while in motion: loss of one finger.
July	27,	Mary Seahill,	15	Craven & Dearnley,	Philadelphia,	do. do.	Standing with her hand on a shaft; flesh of one finger torn.
July	31,	Martha Baumgarten.		John Bromley & Sons,	do.	Loom,	Struck by a shuttle; incision of eye lid.
July	31,	Kate Durkin,		do. do.	do	do.	Reaching for shuttle between the lathe and breast beam of loom and accidentally started the loom; two fingers broken.
Aug.	14,	William J. Call,	30	Joseph M. Adams,	Manayunk,	Elevator,	Supposed to have fallen from third story door on top of elevator beam; died one hour after receiving injuries.
Aug.	20,	Maggie Haney,	18	Craven & Dearnley,	Philadelphia,	Spinning frame,	Picking a lap from a roller while frame was in motion: end of one finger bruised.
Sept.	1,	Mrs. Boxindale.		Robert Beatty,	do.	Combing machine,	Cleaning machinery; part of one finger taken off.

ACCIDENTS—*Continued.*

Date of accident.	PERSON INJURED.	Age (years).	Establishment in which accident occurred.	Location.	Machine, etc., on which accident occurred.	Particulars and extent of injury.
Sept. 8,	Barney Mulrine, . .	15	Thomas Henry's Sons, ...	Philadelphia.	Lapping machine, ...	Carelessness; boy not employed on machine; hand pressed.
Sept. 11,	Peter Inman, ...	60	Chester Manufacturing Co., . . .	Chester, ...	Carding machine, ...	Accidentally slipped and fell against machine; left hand cut and mangled.
Sept. 16,	Francis Coppner, . .	13	Robert Beatty.	Philadelphia, ...	. . . . .	Two fingers crushed; cause not known.
Sept. 25.	Louis Biehl, ...	35	Henry H. Sheip & Co..	do.	Moulding machine, ...	Finger coming in contact with blade of machine; probability of losing finger.
Sept. 28,	William Crouch, . .	15	do. do.	do.	Saw (trimming), ...	Slipped and fell against a saw; arm cut.
Oct. 7,	Ella Philibert. . . .	16	Craven & Dearnley, ...	do.	Twisting frame, ...	Sleeve caught between the gears and guard and drew her arm down; flesh wound on arm.
Oct. 19,	William Martin, . .	26	do. do.	do.	Gearing of woolen card, . . .	Attempting to pull some waste from a cog wheel; finger nail torn off and flesh wound on the end.
Oct. 20,	James Henry, . . .	14	L. C. Krisher, ...	do.	Elevator, ...	Caught between elevator and building; foot scraped on the top.
Oct. 26,	Harry Kenyon. . . .	18	Craven & Dearnley, ...	do.	Gearing of woolen card, . . .	Attempting to pull some waste from some gears. when his finger was caught; thumb nail pulled out and first joint bone broken.
Oct. 29,	Francis Brown. . .	12	Henry H. Sheip & Co., ...	do.	. . . . .	Stick thrown by an employe and penetrated eye; unintentional.
Oct. 29.	Joseph McCormick,	17	L. C. Krisher, ...	do.	Rolling machine, ...	Hand cut slightly while oiling rolling machine.

ACCIDENTS—SECOND DISTRICT.

Date of accident.	PERSON INJURED.	Age (years).	Establishment in which accident occurred.	Location.	Machine, etc., on which accident occurred.	Particulars and extent of injury.
July 29,	George Hoag, Jr.,	15	Reading Hardware Company,	Reading.	Power press,	Carelessness; two fingers cut off at first joint.
Sept. 22,	Paul Young,	17	Reading Cotton Mill Company,	do.	Carding machine,	By carelessly putting his hand inside of belt; two scalp wounds, also right arm abrasion of skin at elbow.
Oct. 20,	William Bureh,		Green Ridge Lumber Company,	Scranton.	Shaper,	Three fingers cut by machine breaking.
Oct. 22,	William Kanfold,		Scranton Wood Works,	do.		Starting gas engine: loss of foot.

ACCIDENTS—THIRD DISTRICT.

June 5.	Jacob Maurer,	23	W. & H. Walker.	Allegheny,	Centrifugal machine.	Bursting of machine: finger broken and face cut.
June 5,	Bernard Lebigh,	42	do.	do.	do. do.	Bursting of machine; cut on arm and side.
June 5,	Moses Maurer,	29	do.	do.	do. do.	Bursting of machine. arm broken.
June 9.	Ignis Troaff,	35	Pittsburgh Locomotive and Car Works.	do.	Machine for shearing bar iron,	Struck by bar of iron: flesh wound on leg.
June 9.	Charles Klass.	30	Pittsburgh Locomotive and Car Works.	do.	Jointing machine,	Hand slipped; badly mutilated.
Jnne 10,	Spencer Smith.	28	Park Bros. & Co.,	Pittsburgh,		Load of circular saw plates slipped from an iron buggy forcing the buggy against and over him; contusion of hip and back.
June 17.	John McAnally,	15	do.	do.		Fell in tank of hot oil; both limbs badly burned. also left hand.

ACCIDENTS—*Continued.*

Date of accident.	PERSON INJURED.	Age (years).	Establishment in which accident occurred.	Location.	Machine, etc., on which accident occurred.	Particulars and extent of injury.
June 19,	Edward Finney, . .	20	Mayer Pottery Company, . .	Beaver Falls.	. . . . .	Cut with a broken lancer while packing goods; flesh wound on wrist.
June 22,	George Staple, . . .	. . .	Carnegie Bros. & Co., ...	Bessemer, ...	. . . . .	Leg badly crushed and afterwards amputated; caused by car running over it.
June 23,	Wm. J. Senaghan, .	21	Pittsburgh Locomotive and Car Works.	Allegheny, ...	Steady-rest for lathe, ...	Steady-rest for lathe fell on his foot: toes of left foot crushed.
July 3,	Aug. Prensser, . . .	32	Carnegie, Phipps & Co..	Pittsburgh, ...	. . . . .	Flash from rolls; loss of one eye.
July 3.	R. Liston, ...	. . .	Carnegie Bros. & Co., ...	Bessemer, ...	. . . . .	Fracture of skull by falling off the trestle.
July 3,	Frank Larendosk, .	30	Carnegie, Phipps & Co., ...	Pittsburgh, ...	. . . . .	Toes of one foot crushed by a bar of iron falling on them.
July 5,	John Kohler, ...	. . .	Carnegie Bros. & Co., ...	Bessemer, ...	. . . . .	Caught between cars while in the act of coupling; injured internally resulting in his death.
July 5,	John Jugan, ...	. . .	do. do.	do.	. . . . .	Caught been barge and cars; injured internally resulting in his death.
July 5,	John Murphy, . . .	. . .	do. do.	do.	. . . . .	Ore falling off trestle and striking him on head; skull fractured.
July 7,	Edward Carrigan, .	. . .	do. do.	do	. . . . .	Struck and run over by engine; resulting in his death.
July 8,	George Sauer. . . .	30	Phillips, Nimick & Co., ...	Pittsburgh.	. . . . .	Toe lacerated by a bar of iron falling on it.
July 10.	Gabe Cuulon, ...	46	Park Bros. & Co., ...	do.	Drop machine.	Struck on head; scalp wound.
July 14,	M. J. Sheridan. . .	18	Erie City Iron Works, ...	Erie, ...	Engine lathe, ...	Caught in change gears; loss of two fingers.
July 23,	Charles Wessell, . .	19	Carnegie, Phipps & Co., ...	Pittsburgh, ...	. . . . .	Head cut by a board.

July 27,	John R. Stewart,	40	do. do	do	Steam hammer,	Struck by steam hammer; right hand crushed.
Aug. 3,	J. E. Ewing,	22	Western File Company,	Beaver Falls,	Cog wheel of grinding machine.	Caught in cog wheel; loss of fingers of left hand.
Aug. 7,	Dave Phillips,	14	Baker Chain and Wagon Iron Manufacturing Company.	Allegheny,	On belting,	Carelessness; arm bruised and cut.
Aug. 13,	John Mazurski.	20	Park Bros. & Co.,	Pittsburgh,	Hydraulic crane,	Plate of steel fell on leg breaking it close to the ankle.
Aug. 21,	Thomas Conlac,	30	Phillips, Nimick & Co.,	do.		Carelessness; cut on arm.
Aug. 30,	Samuel Sterman,		Carnegie Bros. & Co.,	Bessemer,		Burned about face and hands by gas explosion.
Aug. 30,	Howell Williams,		do. do	do.		Burned about face and hands by gas explosion.
Aug. 31,	Jos. Dickinson,	23	do. do.	Duquesne.		Flash from converter while steel was being blown; seriously burned; resulting in his death.
Sept. 4,	Chas. Nelson,	21	do. do.	Braddock,		Run over by freight cars and killed.
Sept. 19.	Mike Jessett,	35	Carnegie, Phipps & Co.	Pittsburgh,		Struck by handle of crane; skull broken.
Sept. 19,	Jacob Sinn,	36	do. do.	Munhall,		Burned to death by hot cinder.
Sept. 19,	James McGuire.	24	do. do.	do.		Burned to death by hot cinder.
Sept. 19,	Edward Williams,	28	do. do.	do.		Burned to death by hot cinder.
Sept. 23,	T. M. Ward,	19	do. do.	do.		Plate falling off castors; leg bruised and finger almost severed from hand.
Sept. 25,	Wm. Backoven.	20	Carnegie Bros. & Co.	Braddock,		Caught between cars while coupling and killed.
Sept. 29,	Paul Vallo.		do. do.	Bessemer.		Fell across ore barrow breaking his neck.
Oct. 1,	Jas. Mullen.	27	Carnegie, Phipps & Co.,	Pittsburgh,		Accidentally tripped while walking; broken wrist.
Oct. 3,	Fred. Peters,	40	do. do.	Munhall,		Burned by hot steel; not seriously.
Oct. 3.	John Sheman,		Carnegie Bros. & Co.,	Bessemer.		Run over by ore car; leg crushed.
Oct. 8.	Jerry Obetz.	39	Pittsburgh Tube Company,	Pittsburgh.		Burned about back and arm by hot pipe.

ACCIDENTS—*Continued*

Date of accident.	PERSON INJURED.	Age (years.)	Establishment in which accident occurred.	Location.	Machine, etc., on which accident occurred.	Particulars and extent of injury.
Oct. 12,	Anton Kochella, . .	27	Park Bros. & Co., ...	Pittsburgh.	. . . . .	Assisting to unload a piece of lumber which fell on his leg, breaking it.
Oct. 12,	Emil Hays, ...	26	Rochester Tumbler Company, . .	Rochester, ...	Elevator, ...	Foot sticking over elevator, was caught and toes crushed.
Oct. 13,	James Macbeth, . .	19	Carnegie, Phipps & Co., ...	Munhall, ...	. . . . .	Struck in eye by chip of steel.
Oct. 14.	Geo. Smith, . . .	26	Carnegie Bros. & Co., ...	Duquesne, ...	. . . . .	Piece of pipe falling from cupola striking him on head; skull fractured.
Oct. 16.	Simon Zubris, . . .	40	Carnegie, Phipps & Co., ...	Munhall, ...	. . . . .	Struck by handle of jack on arm; arm broken.
Oct. 16,	M. Owens, ...	. . .	Carnegie Bros. & Co., ...	Bessemer, ...	. . . . .	Hand caught between cars while coupling; and crushed.
Oct. 20,	Geo. Mockshy, . . .	38	Carnegie, Phipps & Co., ...	Munhall.	. . . . .	Beam fell on him, cutting his head, hands and face.
Oct. 22,	John Elsing, ...	38	Jones & Laughlin, ...	Pittsburgh, ...	Elevator, ...	Breaking of turnbuckle on one of the hoisting ropes; the man died from his injuries.
Oct. 24.	David Cunningham, . . .		Carnegie Bros. & Co., ...	Bessemer.	. . . . .	Run over by railroad cars in yard and was killed.
Oct. 27,	Chas. Bunz.	37	Carnegie, Phipps & Co., ...	Pittsburgh, ...	. . . . .	Billet of steel falling on leg, crushing it.
Oct. 27,	Louis Shermerhorn.	15	Downing Carriage Company, . .	Erie, ...	Elevator, ...	[death. Crushed by elevator; resulting in
Nov. 3,	John Price, ...	14	Oliver Iron and Steel Company, .	Pittsburgh, ...	. . . . .	Steel billet fell on leg, breaking it.
Nov. 10,	John Colgan, ...	31	Carnegie, Phipps & Co., ...	Munhall.	. . . . .	Blowing out of an ingot; burned on hand, foot and back.
Nov. 10,	Harry Bostard, . . .	. . .	do. do.	do.	. . . . .	Face and hands burned by a flash of gas while lighting up an open-hearth furnace.
Nov. 11,	Hugh McMullen, . .	. . .	Carnegie Bros. & Co..	Bessemer, ...	. . . . .	Run over by cars; died a few moments after accident.

Nov. 12,	W. P. Thompson,	36	Carnegie, Phipps & Co.,	Munhall,	Planer,	Caught in planer; arm and hand cut.
Nov. 13,	S. McMinn,	35	do. do.	Pittsburgh,		Casting fell on his hand; two fingers crushed.
Nov. 14,	Thos. Quilter,	26	Park Bros. & Co.,	do.		Explosion of hot copper; loss of one eye.
Nov. 14,	Jacob Wertz,	45	Carnegie, Phipps & Co.,	do.		Crushed to death by railroad cars.
Nov. 14,	Edward Hunt,	43	Phillips, Nimick & Co.,	do.		Bursting of heater; died from injuries.
Nov. 17,	Dennis Critchlow,	30	Carnegie, Phipps & Co.,	Munhall,		Bruised in abdomen by being struck by a plank.
Nov. 20,	Daniel O'Brien,	30	Pittsburgh Forge and Iron Co.,	Allegheny,		Struck by an iron hook on face; teeth loosened.
Nov. 25,	Frank Myers,		Oliver Iron and Steel Company,	Pittsburgh,		Upset iron buggy loaded with iron; arm and hand bruised.
Nov. 25,	Joe Bitner,		do. do.	do.		Buggy or truck loaded with iron upset; foot bruised.
Nov. 25,	Joe Marcotskie,		do. do.	do.		Buggy or truck loaded with iron upset; foot bruised.
Nov. 25,	Mary Casey,	20	do.	do.	Nut tapping machine,	Finger ring caught on chuck; loss of nearly all of third finger of left hand.
Nov. 27,	James Crithy,		do.	do.		Attempting to pass between two railroad cars that were moving and was caught by the arm; arm broken.

STATISTICS OF FACTORIES VISITED—DISTRICT No. 1

PHILADELPHIA.

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Quaker City Laundry,	Laundry,	16	54	. .	2	Good,	June 11.		
Globe Printing House,	Printing,	128	72	. .	13	do.	June 12.		
Syke's Rag Factory.	Sorting rags,	3	16	. .	. . .	Fair,	June 12,	Comply with sections 3, 7, 10, 11 and 18, .	Complied.
Johnston Carpet Factory,	Carpets,	8	13	. .	2	Good,	June 16.		
White Manufacturing Company,	Woolen goods,	20	20	. .	17	Fair,	June 16.		
Kuestner and Faulk Manufacturing Company.	Carpets,	25	15	. .	. . .	Good,	June 16.		
Kingston Book Bindery,	Book binding,	6	30	. .	. . .	do.	June 16.		
Eikhoff & Cramer,	do. do.	6	10	. .	. . .	Fair,	June 16,	Comply with section 10,	Complied.
Jennus Laundry,	Laundry,	9	21	. .	3	Good,	June 17.		
Allen, Lane & Scott,	Printing.	167	15	. .	23	do.	June 18.		
Novelty Cap Company,	Fancy caps,	3	77	. .	6	do.	June 18,	Comply with sections 7 and 12,	Complied.
Arlington Manufacturing Company,	Ginghams,	27	8	. .	1	do.	June 23.		
Stewart Manufacturing Company,	Ginghams and shirts,	6	58	. .	2	do.	June 23.		
Williams' Manufacturing Company,	Cotton and woolen fabrics,	70	80	. .	. . .	do.	June 23.		
Jacob Miller & Sons,	Cotton fabrics,	21	38	. .	2	do.	June 23.		
Main Belting Company,	Belts,	6	21	. .	. . .	do.	June 23.		
Victoria Mills,	Textile cloth (light weight),	25	75	. .	8	do.	June 29.		

Horner Manufacturing Company,	Carpets,	270	80	..	98	Fair,	July 7.	Comply with sections 2, 10 and 12.	Complied.
Edward C. Read,*	do.	22	13	..	...	do.	July 9,	Comply with sections 7, 10 and 12.	
Cochran Manufacturing Company,*	do.	30	10	..	1	do.	July 9,	Comply with sections 7, 10 and 12.	
Johnson Manufacturing Company,*	do.	17	13	..	2	do.	July 9.	Comply with sections 7, 10 and 12.	
Lockhart Manufacturing Co.,*	do.	9	26	..	1	do.	July 9.	Comply with sections 7, 10 and 12.	
Wood & Ward Manufacturing Co.,*	Towels,	21	63	..	...	do.	July 9,	Comply with sections 7, 10 and 12.	
Allen Manufacturing Company,*	Yarns,	26	7	..	5	do.	July 9,	Comply with sections 7, 10 and 12.	
Porter & Dickey,	Textile goods,	13	121	..	2	do.	Jnly 20.		
Star and Crescent Mills,	Turkish towels and dusters,	75	75	..	2	Good,	Jnly 21.		
Reading Screw Company,	Screws,	40	13	..	27	do.	July 29.		
Montgomery Mills,	Carpets,	84	41	..	3	Fair,	July 29,	Comply with sections 2, 3, 10 and 12.	
Ricketts & Prince,	Textile goods,	25	10	..	4	Good,	July 29.		
Hoyle, Harrison & Kaye,	Upholstery goods and chenille curtains.	255	275	..	155	do.	July 29.		
Sullivan Manufacturing Company,	Hosiery,	20	95	..	9	do.	Jnly 31.		
Schlichter Cordage Company,	Cords and twines.	200	175	.	150	Fair,	Aug. 5,	comply with sections 10 and 12.	
Stewart & Son,	Rugs and carpets,	81	14	..	6	do.	Aug. 5,	Comply with sections 2, 3 and 10,	Complied.
John Boggs & Co.,	Ingrain carpets,	24	43	..	...	Good,	Aug. 24.		
Keegan Gingham Mills,	Ginghams,	20	40	..	...	do.	Aug. 24.		
Model Mills (James Whittaker),	Ingrain carpets,	65	60	..	...	do.	Aug. 24.		
Levi Tailoring Company,	Tailoring,	8	10	..	...	do.	Aug. 25.		
Kingston Book Bindery,	Binding books,	6	30	..	...	do.	Aug. 25.		
Enterprise Mills,	Worsted yarns,	25	65	..	18	do.	Aug. 26.		
Horner Carpet Manufacturing Co.,	Carpets,	106	94	..	20	do.	Oct. 22.		
Diamond Carpet Mills,	do.	17	14	..	1	do.	Oct. 22.		
William Allen & Son,	Woolen yarns,	28	8	..	...	do.	Oct. 23.		
Johnson Manufacturing Company,	Carpets,	14	14	..	1	do.	Oct. 23.		
Ricketts and Prince Manufacturing Company.	do.	20	10	..	3	do.	Oct. 23.		

* Thomas Taylor & Sons owners of these mills.

PHILADELPHIA — *Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Montgomery Mills,	Carpets,	88	41	. .	1	Good,	Oct. 23.		
Boylston Mills,	Cotton and woolen goods,	35	75	. .	. . .	do.	Oct. 23.		
Devon Carpet Mills,	Carpets,	33	10	. .	. . .	do.	Oct. 23.		
Read's Carpet Factory.	do.	22	13	. .	. . .	do.	Oct. 23.		
Historical Publishing Company,	Printing and publishing,	54	45	. .	. . .	do.	Oct. 24.		
Avil Printing Company,	Printing,	104	21	. .	. . .	do.	Oct. 24.		
Reading Screw Company,	Screws,	40	13	. .	27	do.	Oct. 24.		
Green's Tailoring Establishment,	Tailoring,	17	18	. .	1	do.	Oct. 26.		
Sunday School Times,	Printing and publishing.	33	12	. .	1	do.	Oct. 27.		
Smith Publishing Company,	Publishing and book selling,	4	16	. .	. . .	do.	Oct. 27.		
Economy Shirt Works,	Shirts,	10	40	. .	. . .	do.	Oct. 27.		
Penfield Truss Company,	Trusses, etc.,	17	18	. .	. . .	do.	Oct. 27.		
National Optical Company,	Optical glasses,	54	86	. .	7	do.	Oct. 28.		
Southwark Mills.	Wool and worsteds,	411	200	. .	8	do.	Oct. 28.		
Angora Mills,	Cotton and woolen goods,	84	166	. .	18	do.	Oct. 29.		
George Callaghan's Estate.	Cotton yarns,	35	80	. .	31	do.	Oct. 29.		
Henry's Flannel Mills,	Flannels,	150	150	. .	31	Poor,	Oct. 29,	Comply with sections 2. 3 and 10,	Complied.
Wolfenden, Shore & Co.,	Woolen cloth,	220	50	. .	72	Good,	Oct. 29.		
Tracy Worsted Mills,	Worsted yarns,	75	400	. .	54	do.	Oct. 30.		

Howell Bros.,	Wall paper,	300		200	do.	Oct. 30.			
Continental Worsted Mills,	Worsted yarns,	111	450	155	do.	Oct. 30.			
Wyeth Bros.,	Chemical works,	71	162	4	do.	Nov. 2.			
Whitely Company,	Woolen and cotton yarns,	34	16	16	do.	Nov. 2.			
Robinson & Loeble,	Preserves,	15	10		do.	Nov. 2.			
Wyeth Bros.,	Chemicals.	71	162	4	do.	Nov. 2.			
Southwark Woolen Mills,	Woolen and worsted yarns,	51	14	4	Poor,	Nov. 3,	Comply with sections 3, 7, 8, 9 and 10.		
Bailey's Twine and Rope Factory,	Twine and rope,	225	400	21	Good,	Nov. 3,	Comply with sections 7, 9 and 11,	Complied.	
West Philadelphia Steam Laundry,	Steam laundry,	5	20	1	do.	Nov. 4,	Comply with sections 2, 3, 4, 7 and 10.		
Coleman Bindery,	Folding and binding,	2	14		do.	Nov. 4.			
Croft and Allen Company,	Candies,	200	300	57	do.	Nov. 4.			
McLaughlin Printing Company,	Printing,	20	6	4	do.	Nov. 5.			
Oldach Bindery,	Binding books,	15	20		do.	Nov. 5.			
Barlow Manufacturing Company,	Chenille cloths and upholstery goods.	25	25	8	do.	Nov. 6.			
Brooks Manufacturing Company,	Upholstery fabrics,	125	100	17	do.	Nov. 6.			
Pennsylvania Worsted Mills,	Worsted yarns,	40	70	14	do.	Nov. 6.			
Providence Worsted Mills,	do. do.	15	65		do.	Nov. 6.			
Sykes Rag Sorting Establishment,	Rag sorting,	3	16		do.	Nov. 9.			
Lockwood Manufacturing Co.,	Tags, boxes and envelopes,	17	73		do.	Nov. 9.			
Miller Confectionery Establishment.	Confectionery,	100	100	25	do.	Nov. 9.			
Novelty Cap Company,	Caps.	3	77	4	do.	Nov. 10.			
Quaker City Laundry,	Laundry,	16	54		do.	Nov. 11.			
Connelly & Sons,	Cotton goods,	32	38		do.	Nov. 11.			
Greer Manufacturing Company,	Woolen fabrics,	65	65	4	do.	Nov. 11.			
National Publishing Company,	Publishing,	173	131	14	do.	Nov. 16,	Comply with sections 2, 3 and 11.		
Cresswell and Washburn Company,	Wall paper,	57	3	12	do.	Nov. 16,	Comply with sections 2 3 and 7.		
Kay Tailoring Establishment,	Tailoring,	15	10	2	do.	Nov. 16.			
Quaker City Cooperage	Cooperage,	235		21	do.	Nov. 17.			

PHILADELPHIA—*Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of Inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Bonanza Manufacturing Company,	Ginghams.	235	. . . .	. .	21	Good,	Nov. 17.		
Main Belting Company, ...	Belts, ...	8	21	. .	. . .	do.	Nov. 18.		
Williams' Manufacturing Company,	Woolen goods, ...	70	80	. .	4	do.	Nov. 18.		
Miller Manufacturing Company, . .	Ginghams, ...	16	44	. .	4	do.	Nov. 19.		
Sullivan Hosiery Manufacturing Company.	Hosiery, ...	25	125	. .	8	do.	Nov. 20,	Comply with sections 2 and 3.	
Bochmau Manufacturing Company,	Woolen fabrics, ...	80	200	. .	17	do.	Nov. 20.		
Watt Manufacturing Company, . .	Ginghams, ...	20	60	. .	1	do.	Nov. 25.		
Milder Tailoring Establishment, . .	Tailoring, ...	10	30	. .	. . .	do.	Nov. 25.		
Brison Manufacturing Company. .	Textile goods, ...	24	6	. .	. . .	do.	Nov. 26.		
Globe Printing Company, ...	Printing.	128	72	. .	13	do.	Nov. 26.		
Penusylvania Worsted Mills, . . .	Worsted fabrics, ...	141	267	. .	26	do.	Nov. 27,	Comply with sections 2, 3. 7 and 11.	
Schlichter Cordage Company, . . .	Cordage, ...	200	175	. .	150	do.	Nov. 27.		
Stewart Manufacturing Company, .	Rugs, etc., ...	81	14	. .	12	do.	Nov. 27.		
James Whittaker, ...	Ingrain carpets, ...	65	60	. .	. . .	do.	Nov. 27.		

GERMANTOWN, PHILADELPHIA.

Jones Bros. Hosiery Company, . .	Hosiery, ...	14	34	. .	. . .	Good,	Aug. 4.		
Jos. Fling & Sons, ...	Cotton, woolen and merino yarus.	39	9	. .	8	do.	Aug. 4,	Comply with sections 2 and 3.	

FRANKFORD, PHILADELPHIA.

Berkshire Manufacturing Company,	Ginghams, etc.,	200	200	..	15	Fair,	Nov. 25,	Comply with sections 2, 3, 10 and 12.	

MANAYUNK, PHILADELPHIA.

Belmont Woolen Mills,	Woolen yarns.	40	20	..	...	Good,	Nov. 12.		
Clegg Manufacturing Company,	Cotton and woolen fabrics,	27	23	..	6	do.	Nov. 13.		
Ashland Paper Company,	Paper.	40	15	..	...	do.	Nov. 13.		

PHILADELPHIA.

W. G. Allen & Co.,	Coats,	62	13	..	..	Fair,	June 1,	Disinfect water closets,	Complied.
Charles W. Meneke,	Cigars,	20	10	..	6	Good,	June 1.		
Oxford Bindery,	Printing, etc.,	55	65	..	32	do.	June 2.		
J. D. Orne & Co.,	Knit goods,	40	80	..	9	do.	June 2.		
John Crompton & Co.,	Paper boxes,	20	140	..	23	do.	June 3.		
Wanamaker & Brown,	Clothing,	477	23	..	15	do.	June 3.		
Boltz & Clymer,	Cigars,	220	280	.	39	do.	June 6.		
W. G. Ellis & Co.,	Hosiery.	45	180	..	14	do.	June 8.		
W. J. Callahan,	Hats.	20	60	..	23	do.	June 8.		
Duling & Boeck,	Printing.	60	20	..	3	do.	June 9.		
Nonpareil Laundry,	Laundry.	5	55	..	4	do.	June 10.		
W. F. Bernstein,	Woven wire goods,	20	60	..	...	do.	June 11.		
George W. Plumly,	Paper boxes.	150	350	..	65	do.	June 12.		
Gumpert Bros.,	Cigars.	320	180	..	29	do.	June 12.		

PHILADELPHIA—*Continued.*

NAME OF FACTORY OR WORKSHOP.	Gooods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
R. J. Allen & Co.,	China,	32	8	. .	3	Good,	June 15.		
Ivins, Deitz & Magee,	Carpets,	260	240	. .	43	do.	June 15.		
Marks Bros..	Notions,	120	380	. .	134	do.	June 15,	Comply with section 2,	Complied.
Troy Laundry,	Laundry,	15	285	. .	. . .	do.	June 16,	Gates to elevator,	Complied.
J. E. Porter,	Publisher,	13	7	. .	4	do.	June 16.		
Luburg Manufacturing Company,	Upholstery goods,	120	10	. .	3	Fair,	June 17,	Comply with sections 7, 9, 10 and 18,	Complied.
Howell Stein Company,	Shirts,	10	50	. .	23	Good,	June 17.		
Granville B. Haines,	Dry goods,	300	600	. .	143	do.	June 18.		
French Richards Company,	Drugs,	382	18	. .	3	do.	June 18.		
United Shirt Company,	Shirts,	2	17	. .	. . .	do.	June 18.		
Keystone Watch Case Company,	Watch cases,	120	480	. .	107	do.	June 18.		
Eagle Shirt Factory,	Shirts,	30	135	. .	. . .	do.	June 19.		
Salier, Lewin & Co.,	Shoes,	200	300	. .	93	do.	June 19.		
Strawbridge & Clothier,	Dry goods,	1,200	800	. .	500	do.	June 22,	Post notices leading to fire escape and all other notices pertaining to the act.	Complied.
William Mann & Co.,	Printing,	320	80	. .	153	do.	June 23.		
Caledonia Carpet Mills,	Carpets,	400	225	. .	50	Fair.	June 24,	Comply with section 10,	Complied.
E. N. Godshalk & Co.,	Trimmings,	200	400	. .	12	Good,	June 25,	Box two shafts,	Complied.
A. Crenshaw,	Cotton goods,	20	40	. .	. . .	Bad,	June 25,	Water closets ordered for females,	Complied.
Gobelin Tapestry Company	Carpets,	15	10	. .	2	Good,	June 29,	Water closets ordered to be designated,	Complied.

McNeely & Co.,	Morocco,	700	....	..	50	do.	June 29.		
Sanquoit Silk Manufacturing Company.	Silks,	20	380	..	39	Fair,	June 29,	Post all notices pertaining to the act, designate water closets and line with tin those used by the females.	Complied.
Robert Mitcheson,	Pipes,	50	25	..	5	Good,	June 30,	Place safeguard to floor opening. designate water closets and report accidents.	Complied.
William Selman,	do.	16	14	..	5	do.	June 30.		
Feister Printing Company,	Printing,	48	150	..	25	do.	July 1.		
A. D. Irwin & Bro.,	Yarns,	10	40	..	...	do.	July 1.		
William Henderson,	Carpets,	34	32	..	...	do.	July 2.		
James L. Cochran & Bro.,	Yarns,	28	2	..	8	do.	July 2.		
Stephen Whitman,	Chocolate,	50	50	..	...	do.	July 3.		
Thomas Carrick,	Biscuits,	56	....	..	12	do.	July 3.		
Thomas A. Pearce,	Hosiery,	100	300	..	50	do.	July 6.		
J. C. Graham,	Trimmings,	85	85	..	29	do.	July 6.		
Philip Doerr,	Carpets,	125	130	..	...	do.	July 7.		
Jos. Adamson,	Braids,	25	150	..	27	do.	July 8.		
David Henly's Sons,	Artificial flowers,	125	165	..	...	do.	July 13.		
Henry Disston & Sons,	Saw works,	3,680	320	..	305	do.	July 14.		
Erben & Search,	Woolen mills,	150	250	..	75	Good,	July 15.		
R. Vickers,	Hosiery,	25	50	..	12	Bad,	July 16,	Water closet ordered	Complied.
Pequa Mills,	Cotton and woolen goods,	450	450	..	74	Good,	July 20.		
William Hunter, Jr.,	Gimps,	4	46	..	13	do.	July 20.		
Centennial Carpet Mill,	Carpets,	125	25	..	...	do.	July 21.		
Columbia Carpet Mills,	do.	32	18	..	...	do.	July 21.		
J. C. Graham,	Upholstery,	20	200	..	33	do.	July 22.		
Oriental Knitting Mills,	Woolen goods,	50	200	..	27	do.	July 22.		
Blair. Hamilton & Rusell,	Carpets,	45	20	..	6	do.	July 23.		
Fairmount Knitting Mills,	Woolen goods,	30	250	..	59	do.	July 23.		
Powell & Bro.	Woolen yarns,	38	400	..	100	do.	July 24.		

PHILADELPHIA—*Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Male.	Females.	Under 12.	12 to 16.				
Waterloo Hosiery Mill,	Hosiery,	25	100	. .	35	Good.	July 24.		
Rock Carpet Mill,	Carpet,	35	50	. .	. . .	do.	July 25.		
Endurance Mills,	Cotton and worsted,	100	250	. .	8	do.	July 27.		
J. H. Klauder,	Jersey cloth,	20	210	. .	. . .	do.	July 27.		
Fred. Rumpf & Bro.,	Woolen yarns,	75	72	. .	7	do.	July 28.		
Putman Carpet Mills,	Brussels carpets and rugs,	78	78	. .	6	do.	July 29.		
Brown Bros. & Eberle Company,	Hosiery,	25	100	. .	23	do.	July 29.		
John Scanlan & Son,	Cotton and woolen goods,	40	76	. .	. . .	do.	July 30.		
Keystone Carpet Mills,	Carpets,	70	60	. .	. . .	do.	July 30.		
William Myers & Son,	Horse blankets,	150	250	. .	. . .	do.	July 30.		
Park Carpet Mills,	Carpets,	115	210	. .	22	do.	July 31.		
Porter & Dickey,	Cotton and woolen goods,	102	8	. .	9	do.	July 31.		
John Wanamaker,	Dry goods,	1,700	2,300	. .	350	do.	Aug. 3,	One fire escape ordered, post all notices pertaining to the act, also miscellaneous orders given.	Complied.
Stinson & Kuribaum,	Carpets,	354	106	. .	19	do.	Aug. 4.		
Victoria Mills,	Hosiery and jersey goods,	127	125	. .	48	do.	Aug. 5.		
William B. Keefer,	Ingrain carpets,	80	70	. .	. . .	do.	Aug. 6.		
Star Braid Mills,	Braids,	100	250	. .	62	do.	Aug. 7.		
Kenseli, Colliday & Co.,	Dress trimmings,	175	325	. .	89	do.	Aug. 7.		

George W. Plumly,	Paper boxes,	20	260	..	89	do.	Aug. 7,	One additional fire escape and one stairway.	Complied.
Eavenson's,	Soaps,	34	8	..	5	do.	Aug. 18.		
Saller, Lewin & Co.,	Shoes,	350	150	..	7	do.	Aug. 18.		
Philadelphia Watch Case Company,	Watch cases,	780	320	..	116	do.	Aug. 18.		
J. C. Graham,	Trimmings,	110	80	..	29	do.	Aug. 19.		
Laird, Schober & Mitchell,	Shoes,	400	200	..	69	do.	Aug. 19,	Erect two fire escapes and post all notices pertaining to the act.	Complied.
Alex. Erskine,	Shawls,	15	10	..	...	Fair,	Aug. 20.	Comply with sections 2, 9, 10 and 18.	
Joseph P. Murphy,	Woolen goods,	189	366	..	70	Bad,	Aug. 20,	Provide water closets for females.	
Thomas L. Lawlor,	Cotton and woolen goods,	4	11	..	1	do.	Aug. 20,	Comply with sections 9, 10 and 18.	
Philip Hauck,	Paper boxes,	35	90	..	36	Good,	Aug. 20.		
Philip Doerr,	Braids,	50	135	..	15	do.	Aug. 20.		
Boltz & Clymer,	Cigars,	280	120	..	20	do.	Aug. 21,	Erect one additional fire escape and post all notices pertaining to the act.	Complied.
David Henly,	Trimmings,	17	163	..	53	do.	Aug. 21.		
W. J. Callahan,	Hats,	14	26	..	...	do.	Aug. 24.		
A. J. Elsey,	Artificial flowers,	2	58	..	43	do.	Aug. 24.		
Daniels & Blumenthal,	Knee pants,	42	16	..	...	do.	Aug. 25.		
Middendorf Bros.,	Lace caps,	5	75	..	21	do.	Aug. 25.		
Paxton & Comfort,	Funeral supplies,	37	13	..	6	do.	Aug. 26.		
John Hanifen,	Hosiery,	230	220	..	31	do.	Aug. 26.		
Ashenback & Miller,	Laboratory,	14	10	..	...	do.	Aug. 27.		
Hance Bros.,	do.	32	28	..	...	do.	Aug. 27.		
Frank Schoble & Co.,	Carpets,	50	30	..	...	do.	Aug. 28.		
Thackara Manufacturing Company,	Chandeliers,	225	25	..	13	do.	Aug. 28.		
Fleck & Dutt,	Yarns,	100	180	..	35	do.	Aug. 31.		
R. E. Bender,	Braiding,	4	116	..	17	do.	Aug. 31.		
Troy Laundry,	Laundry,	12	41	..	...	do.	Sept. 1.		
Lichen Bros.,	Cigars,	188	12	..	1	do.	Sept. 1.		

PHILADELPHIA—*Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12 years.	12 to 16 years.				
P. McCutcheon & Bro.	Neckwear,	10	30	. .	. . .	Bad,	Sept. 2,	Bell to elevator, new water closet ordered and those in use to be cleaned and disinfected.	Complied.
Oxford Bindery,	Blank books.	35	80	. .	6	Good,	Sept. 3,	Erect fire escape,	Complied.
Curtis Publishing Company,	Printing,	50	150	. .	12	do.	Sept. 4.		
M. W. Lipper & Co.,	Dress trimmings,	175	250	. .	31	do.	Sept. 8,	Comply with section 1.	Complied.
John Compton & Co.	Paper boxes,	20	100	. .	40	Bad,	Sept. 8.	Hand rails on stairs and one water closet ordered.	Complied.
H. Vendig & Bro.,	Leather goods,	17	18	. .	8	Good,	Sept. 9.		
Hastings & Co.,	Gold leaf,	100	175	. .	41	do.	Sept. 9.		
Philadelphia Local Telegraph Co.,	Telegraph,	15	16	. .	3	do.	Sept. 10.		
M. Eikins & Co.,	Shoes,	100	50	. .	4	do.	Sept. 11,	Guard one belt,	Complied.
L. C. Hall,	Silk knit goods,	30	150	. .	33	do.	Sept. 11.		
A. J. Holman,	Bibles,	125	75	. .	40	do.	Sept. 11,	Erect additional fire escape,	Complied.
Gumpert Bros.,	Tobacco,	325	275	. .	93	do.	Sept. 12,	Two fire escapes ordered,	Complied.
Emil Wahls,	Bone buttons,	111	14	. .	13	do.	Sept. 12.		
M. W. Lipper,	Trimmings,	100	400	. .	27	do.	Sept. 21,	Designate water closets,	Complied.
W. H. Horstman,	do.	75	350	. .	81	do.	Sept. 22.		
Kaufman Bros.,	Buttons.	100	300	. .	63	do.	Sept. 23,	Erect fire escape, comply with section 1,	Complied.
Dunlap & Clarke,	Printing,	80	20	. .	. . .	do.	Sapt. 23.		
Wright Bros.,	Parasols,	100	200	. .	58	do.	Sept. 24.		

Sternberger & Co.,	Shirts,	105	495	..	30	do.	Sept. 24.		
S. B. & B. W. Fleisher,	Worsted yarns,	100	500	..	82	do.	Sept. 24,	Designate water closets,	Complied.
Powers & Weightman,	Laboratory,	360	140	..	...	do,	Sept. 25.		
Lazerus & Lipper,	Trimmings.	190	20	..	6	Bad,	Sept. 25,	Comply with section 10,	Complied.
Ben. F. McCutcheon,	Laundry,	1	12	..	2	Good,	Sept. 28.		
Keystone Publishing Company,	Books,	28	14	..	...	do.	Sept. 28,		
M. P. Phillpot & Co.,	Paper boxes.	15	85	..	...	do.	Sept. 29,		
G. A. Bisler,	do.	25	100	..	15	do.	Sept. 29.		
H. Josephson,	Neckwear,	2	28	..	...	do.	Sept. 30.		
Brown & Bailey,	Paper boxes,	30	50	..	...	do.	Oct. 1.		
Roig & Langsdorf,	Cigars,	180	20	..	...	do.	Oct. 1.		
Walter M. Steppacher.	Shirts,	25	100	..	...	do.	Oct. 2.		
Henry Zauner,	Lace caps,	2	73	..	...	do.	Oct. 2.		
John Wanamaker,	Dry goods,	1,700	2,300	..	350	do.	Oct. 5.		
George W. Plumly,	Paper boxes,	20	260	..	89	do.	Oct. 5.		
Laird, Schober & Mitchell,	Shoes,	400	200	..	69	do.	Oct. 6.		
Boltz & Clymer,	Cigars,	280	120	..	20	do.	Oct. 7.		
Oxford Laundry,	Laundry,	35	80	..	6	do.	Oct. 7.		
M. W. Lipper,	Trimmings,	165	250	..	31	do.	Oct. 8.		
Gumpert & Bros.,	Tobacco works,	325	275	..	93	do.	Oct. 9.		
A. J. Holman,	Bibles,	125	75	..	40	do.	Oct. 9.		
Weaver Mailing and Envelope Co.,	Envelopes,	7	18	..	3	do.	Oct. 12.		
Bell Telephone Company,	Telephones,	430	70	..	15	do.	Oct. 12.		
Den Steam Shirt Factory,	Shirts,	25	275	..	22	do.	Oct. 13.		
Allen & Marvin,	Shoes,	22	28	..	5	do.	Oct. 13.		
Wm. F. Bernstein,	Woven wires,	20	60	..	7	do.	Oct. 14.		
Geo. D. Ellis,	Trusses,	17	8	..	2	do.	Oct. 14.		
P. C. Thomson,	Essence of coffee,	35	40	..	...	do.	Oct. 15.		
P. C. Lang,	Coats,	12	23	..	...	do.	Oct. 15.		

PHILADELPHIA—*Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Wanamaker & Brown,	Clothing,	482	18	. .	15	Good.	Oct. 16.		
Luberg Manufacturing Company.	Upholstery	120	10	. .	3	do.	Oct. 16.		
E. N. Godshalk,	Trimmings,	560	40	. .	. . .	do.	Oct. 16.		
Sanquoit Silk Company.	Silks,	20	280	. .	39	do.	Oct. 17.		
Robert Mitcheson,	Pipes,	50	25	. .	5	do.	Oct. 20.		
Wright Bros. & Co.,	Parasols,	280	320	. .	23	Fair.	Oct. 20.	Comply with sections 7, 9, 10 and 18.	Complied.
A. Crenshaw,	Cotton goods.	20	40	. .	. . .	Good,	Oct. 21.		
Middendorf Bros.,	Lace goods,	5	120	. .	. . .	do.	Oct. 22.		
Thos. Carrick,	Crackers,	56	. . . .	. .	12	do.	Oct. 23.		
Feister & Co.,	Printers,	48	150	. .	. . .	do.	Oct. 23.		
B. Vickers,	Hosiery,	25	50	. .	. . .	do.	Oct. 24.		
Erben & Search,	Woolen goods,	45	280	. .	34	do.	Oct. 26.		
McNeely & Co.,	Morocco,	600	. . . .	. .	50	do.	Oct. 26,	Gates to elevator.	
John Wanamaker,	Dry goods,	2,000	2,300	. .	350	do.	Oct. 27.		
P. McCutcheon,	Neckwear,	40	40	. .	1	do.	Oct. 28.		
Fleisher Worsted Works,	Worsteds,	100	500	. .	250	do.	Oct. 28.		
M. W. Lipper,	Trimmings,	100	400	. .	27	do.	Oct. 29.		
Kaufman Bros.,	do.	100	300	. .	25	do.	Oct. 29.		
Lazerus & Lipper,	Upholstery trimmings,	90	20	. .	3	do.	Oct. 29.		
A. J. Holman,	Bibles,	125	75	. .	47	do.	Oct. 30.		

Oxford Bindery,	Printing,	35	80	. .	. . .	do.	Oct. 30.		
Boltz & Clymer,	Cigars,	280	120	. .	17	do.	Oct. 30,		
M. Elkins & Co.,	Shoes,	100	50	. .	4	do.	Oct. 30.		
John Compton,	Paper boxes,	20	100	. .	23	do.	Oct. 30.		
Kaufman & Reuben,	Ladies' underwear,	5	120	. .	19	do.	Oct. 31.		
Fleck & Dutt,	Yarns,	200	80	. .	35	do.	Oct. 31,	Post notices,	Complied.
Wm. D. Munier,	Neckwear,	20	60	. .	3	do.	Oct. 31.		
Wright Bros.,	Parasols,	280	320	. .	23	do.	Oct. 31.		
Robert Mitcheson,	Pipes,	50	25	. .	2	do.	Oct. 31.		
E. N. Godshalk,	Trimmings,	560	40	. .	59	do.	Oct. 31.		
Weaving Mailing and Envelope Co.,	Envelopes,	7	18	. .	1	do.	Oct. 31.		
Gumpert Bros.	Tobacco,	325	275	. .	93	do.	Oct. 31.		
George Harris & Sons,	Printing,	95	290	. .	38	do.	Nov. 2.		
Mrs. A. J. Parker,	Straw works,	10	50	. .	. . .	do.	Nov. 2.		
Pennsylvania Cloak Company,	Cloaks,	42	38	. .	. . .	do.	Nov. 3.		
Mindil & Co.,	Infants' wear,	5	75	. .	. . .	do.	Nov. 3.		
National Metal Edge Box Company,	Metal edge boxes,	30	30	. .	12	do.	Nov. 3.		
F. W. Maurer & Sons,	Trimmings,	25	250	. .	55	do.	Nov. 4.		
Morrell Bros.,	Printers,	40	40	. .	23	do.	Nov. 4,		
Wm. B. Riley,	Horse clothing,	20	16	. .	18	do.	Nov. 4		
Weil Bros.,	Shirts,	46	4	. .	. . .	do.	Nov. 4.		
Solomon Bros,	Shoes,	3	42	. .	. . .	do.	Nov. 4.		
John Dittman,	Laundry,	2	16	. .	. . .	do.	Nov. 5.		
Yates & Troth,	Clothing,	6	8	. .	2	do.	Nov. 5.		
B. Hooley & Son,	Printing,	9	42	. .	. . .	do.	Nov. 5.		
Gemmi Bros.,	do.	40	20	. .	. . .	do.	Nov. 5.		
W. H. Horstman,	Trimmings,	220	380	. .	120	do.	Nov. 5.		
Ziegler Bros.,	Shoes,	250	200	. .	14	do.	Nov. 5.		
James Arnold,	Printing,	25	15	. .	. . .	do.	Nov. 5.		

PHILADELPHIA—*Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Pennsylvania Shoe Company, . . .	Shoes, ...	27	16	. .	. . .	Good,	Nov. 5.		
Franklin Print Company, ...	Printing, ...	61	9	. .	2	do.	Nov. 5.		
Jos. Potter.	Straw works, ...	10	150	. .	20	do.	Nov. 5.		
Forbes Publishing Company, ...	Publishing company. . . .	25	150	. .	. . .	do.	Nov. 5.		
Kaufman & Reuben, ...	Underwear, ...	5	120	. .	. . .	do.	Nov. 5.		
W. G. Ellis.	Hosiery.	15	135	. .	23	do.	Nov. 5.		
Ketterlinus.	Printing, ...	25	60	. .	16	do.	Nov. 6.		
Wahl's, ...	Buttons, ...	111	14	. .	. . .	do.	Nov. 6.		
Keystone Skirt Company, ...	Skirts, ...	2	78	. .	. . .	do.	Nov. 9.		
Wanamaker & Brown, ...	Clothing, ...	480	20	. .	15	do.	Nov. 9.		
Kaufman Bros, ...	Buttons, ...	100	300	. .	. . .	do.	Nov. 9.		
Wm. Ayres & Sons, ...	Woolens, ...	200	100	. .	6	do.	Nov. 9.		
S. M. Wanamaker, ...	Clothing, ...	210	40	. .	25	do.	Nov. 10.		
Jos. P. Murphy, ...	Worsteds, ...	120	480	. .	139	do.	Nov. 10.		
Thos. L. Lawler, ...	Yarns, ...	7	11	. .	. . .	do.	Nov. 10.		
Alex. Erskine, ...	Woolens, ...	6	10	. .	. . .	do.	Nov. 10.		
Ladies' Home Journal, ...	Printing, ...	50	150	. .	. . .	do.	Nov. 11.		
Oldach & Co., ...	Book binding, ...	60	40	. .	. . .	do.	Nov. 11.		
Clarence M. Busch, ...	Printing, ...	5	35	. .	. . .	do.	Nov. 11.		
G. Daniels, ...	Shirts, ...	2	78	. .	. . .	do.	Nov. 11.		

C. C. Hancock,	Neckwear,	15	150		do.	Nov. 12.		
Abe Hirsh & Bro.,	Parasols,	30	60		do.	Nov. 12.		
Lyon & Loeb,	Paper boxes,	12	68		do.	Nov. 12.		
A. Gentsh & Son,	Paper boxes,	25	50	18	do.	Nov. 12.		
Sternberger,	Shirts,	105	495	121	do.	Nov. 13.		
Sol. Miller,	Globe shirts,	2	73		do.	Nov. 13.		
Lewis Oppenheimer,	Suspenders,	5	30		do.	Nov. 13.		
Walter M. Steppacher,	Shirts,	25	100		do.	Nov. 13.		
Pennsylvania Button Works,	Buttons,	15	50	12	do.	Nov. 16.		
F. Schottle,	Paper boxes,	35	115	43	do.	Nov. 16.		
Frishmuth, Bro. & Co.,	Shoes,	140	60		do.	Nov. 16.		
John Mustin,	Notions,	6	15	3	do.	Nov. 17.		
R. J. Lennon,	Dry goods,	20	80		do.	Nov. 17.		
Lewis Eshner,	Neckwear,	145	130		do.	Nov. 17.		
Langfield Bros.,	Leather goods,	200	100	7	do.	Nov. 17.		
B. F. Dewees,	Dry goods,	30	50	3	do.	Nov. 18.		
Singer Manufacturing Company,	Sewing machines,	50	10		do.	Nov. 18.		
J. B. Shepherd,	Dry goods,	50	50		do.	Nov. 19.		
J. Rothschild,	Millinery,	5	30		do.	Nov. 19.		
Darlington & Runk,	Dry goods,	100	300	33	do.	Nov. 19.		
English & Sons,	Furs,	75	75		do.	Nov. 20.		
Batchelor Bros.,	Cigars,	92	30		do.	Nov. 20.		
T. Lallor,	Dry goods,	30	10		do.	Nov. 20.		
Jacob Reed & Sons,	Clothing,	185	15	17	do.	Nov. 20.		
Schmoele,	Millinery,	5	45		do.	Nov. 21.		
G. A. Swartz,	Toys,	12	12		do.	Nov. 21.		
Rosenau Bros.,	Straw goods,	50	15		do.	Nov. 23.	Erect fire escape and guard elevator.	
Blum Bros.,	Cloaks,	90	60		do.	Nov. 23.		
Blaylock & Blynn,	Hats,	12	9	3	do.	Nov. 23.		

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PHILADELPHIA—*Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Varwig Bros.	Pocket books.	17	18	. .	. . .	Good,	Nov. 23.		
William Huey,	Lace goods,	5	45	. .	. . .	do.	Nov. 24.		
A. J. Allen,	China,	65	15	. .	10	do.	Nov. 24.		
Snellenberg & Co.,	Clothing,	85	15	. .	10	do.	Nov. 24.		
D. Morse,	Baking company.	10	15	. .	. . .	do.	Nov. 24.		
Strawbridge & Clothier,	Dry goods,	1,200	800	. .	500	do.	Nov. 25.		
Eagle Shirt Factory,	Shirts,	30	135	. .	4	do.	Nov. 25.		
Eisenlohr,	Cigars.	15	10	. .	. . .	do.	Nov. 25.		
Granville B. Haines,	Dry goods,	125	275	. .	79	do.	Nov. 26.		
S. May,	Straw works,	10	10	. .	. . .	do.	Nov. 26.		
Partridge & Richardson,	Dry goods,	100	250	. .	50	do.	Nov. 26.		
Gerson's,	Millinery,	25	100	. .	25	do.	Nov. 27.		
F. W. Belcher,	Dry goods,	20	80	. .	25	do.	Nov. 27.		
Alfred Williams,	Gloves.	3	27	. .	. . .	do.	Nov. 27.		
Sherman Carpet Company.	Carpets,	70	50	. .	1	Fair,	July 7,	Comply with section 10.	
Thomas Huston & Co.,	do.	40	40	. .	4	do.	July 15,	Comply with sections 7 and 12.	Complied.
Schoenhut & Co.,	Toys,	40	. . . .	. .	20	Good,	July 16.		
Schoenhut & Co.,	do.	20	10	. .	17	Fair,	July 16,	Comply with section 10.	Complied.
J. Ritter Preserve Company,	Preserves,	48	12	. .	3	Good,	July 17.		
John Bromley & Sons.	Rugs and carpets,	916	4 1	. .	107	Fair,	July 21,	Comply with sections 2, 10 and 12.	Complied.

Bromley Manufacturing Company.	do. do.	86	441	137	do.	July 21,	Comply with sections 10 and 12.	Complied.
Somerset Carpet Mills,	Carpets and yarns,	47	30	1	do.	July 21,	Comply with sections 10 and 12,	Complied.
Eastlake Manufacturing Company,	Furniture gimps.	5	24	4	Good,	July 22.		
Caldwell, Antrim & Co.,	Umbrellas,	20	30		do.	July 22.		
A. Holmes,	Carpets,	19	14	1	do.	July 22.		
Union Mills,	Hosiery and knit goods,	50	125	40	do.	July 23.		
Wolstenholme, Harrigan & Clark,	Worsted yarn,	48	22	17	do.	July 23.		
John F. Lodge,	Yarns,	55	15		do.	July 24.		
E. C. Beebe & Son,	Shirts,	15	65	12	do.	July 27,	Comply with sections 2, 3 and 18,	Complied.
Samuel White,	Carpets and rugs,	125	25	5	do.	July 27.		
Folwell Bros. & Co.,	Dress goods,	275	245	80	do.	July 30.		
Franklin Carpet Mill,	Carpets,	90	30	7	do.	July 31.		
Pilling & Madeley,	Hosiery and underwear,	87	693	239	do.	July 31.		
William T. Smith & Son,	Curtains and rugs,	325	50	50	do.	July 31.		
Craven & Dearnley,	Worsted and woolen yarns,	78	180	35	do.	Aug. 4.		
Thomas Henry & Sons,	Hosiery and carpet yarns,	43	17	14	do.	Ang. 5.		
Jos. Black & Sons,	Hosiery,	25	150	75	do.	Aug. 5.		
Robertson & Hall,	Carpets,	24	29	1	do.	Ang. 5.		
Orinoko Mills,	Upholstery,	140	80	50	do.	Aug. 7.	Comply with section 12,	Complied.
John E. Hanifen & Co.,	Knit goods and hosiery,	50	100	9	do.	Aug. 12.		
James H. Kerr,	Ginghams and dress goods,	44	42	5	do.	Aug. 13,	Comply with sections 2 and 12,	Complied.
Getty & Spratt,	Carpets,	20	17	1	do.	Aug. 13,	Comply with section 12,	Complied.
John Dallas' Sons,	Ginghams and dress goods,	15	30	1	do.	Aug. 14.		
Scott Manufacturing Company,	Hosiery,	15	44	8	do.	Aug. 14.		
J. B. Ryer & Co.,	Silk draperies and tapestry,	134	71	27	do.	Ang. 14,	Comply with section 7,	Complied.
William Scholes & Sons,	Woolen yarns,	66	29	22	Fair,	Aug. 17,	Comply with sections 7, 10 and 12,	Complied.
Stead & Miller,	Upholstery goods,	150	150	25	Good,	Aug. 18,	Comply with section 7,	Complied.
James Long, Bro. & Co.,	Cotton and woolen goods,	60	80	9	do.	Aug. 19.		
C. & F. Boulter,	Hosiery and knit goods,	10	50	6	do.	Aug. 20,	Comply with section 11,	Complied.

PHILADELPHIA—*Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
James Hogg,	Jersey and stockinet coats,	7	63	. .	1	Good,	Aug. 20.	Comply with section 11,	Complied.
Albert Oliver,	Hosiery and stockinet coats,	35	90	. .	. . .	do.	Aug. 20,	Comply with sections 11 and 12,	Complied.
Samuel R. Read,	Shoes,	14	12	. .	. . .	do.	Aug. 21,	Box belt on second floor,	Complied.
Carson & Irwin,	Ingrain carpets,	34	16	. .	. . .	do.	Aug. 21,	Guard elevator,	Complied.
John Blood & Co.,	Hosiery and jerseys,	75	325	. .	200	do.	Aug. 21,	Comply with section 7,	Complied.
James Martin & Co.,	Print works,	199	16	. .	. . .	do.	Aug. 24.	Comply with sections 10 and 12,	Complied.
Hero Fruit Jar Company,	Fruit jars, etc.,	407	129	. .	68	Fair,	Aug. 25.	Comply with sections 2, 3 and 8,	Complied.
Brown Bros. and Aberle Company,	Hosiery,	16	19	. .	6	Good.	Aug. 27.		
Owen Osborne,	do.	60	140	. .	31	do.	Aug. 28.		
Jos. H. Beggs,	Curtains and draperies,	80	120	. .	3	do.	Aug. 28,	Comply with sections 2 and 3,	Complied.
R. J. Stinson,	Carpets,	35	35	. .	4	do.	Aug. 28.		
Bromley Bros. Carpet Company,	Carpets and rugs,	250	200	. .	12	do.	Aug. 31,	Comply with sections 8 and 12,	Complied.
Erhard Biswanger,	Carpets,	19	11	. .	. . .	do.	Sept. 1.		
Thomas Jaggers,	Cotton and woolen yarns,	36	12	. .	7	do.	Sept. 4.		
James Woodhead,	Shawls,	10	20	. .	12	do.	Sept. 4,	Comply with sections 2, 3 and 11,	Complied.
Robert Beatty,	Hosiery yarns,	94	16	. .	20	Bad.	Sept. 4,	Comply with sections 10 and 12,	Complied.
H. Whitaker's Sons,	Carpet yarns,	25	10	. .	1	Good,	Sept. 8.		
Jos. T. Smith,	Worsted yarns,	5	35	. .	15	do.	Sept. 8.		
Washington Flint Glass Works,	Flint and colored glassware,	240	10	. .	150	do.	Sept. 9.		

National Hardware and Malleable Iron Works.	Fittings for gas, steam and water,	326	4	. .	16	do.	Sept.	14.		
J. Barton Smith Company, ...	Saws, tools and specialties, .	98	1	. .	26	do.	Sept.	14.		
A. J. Reach & Co., ...	Base balls and supplies, . . .	47	28	. .	29	do.	Sept.	15.		
Boltz, Clymer & Co., ...	Cigars, ...	280	75	. .	2	do.	Sept.	15.		
Victoria Mills, ...	Mohair and worsted plush, .	10	40	. .	. . .	do.	Sept.	17,	Comply with section 3.	
Robert Lewis, ...	Lace, silk curtains and upholstery.	26	14	. .	2	do.	Sept.	17,	Comply with sections 2, 3, 8 and 12, ...	Complied.
Isaac Lockhart, ...	Carpets, ...	11	15	. .	. . .	do.	Sept.	17,	Comply with sections 3, 7 and 12.	
Buck & Co., ...	Hosiery, ...	20	30	. .	2	do.	Sept.	21.		
W. A. Gardner, ...	Shawls, ...	2	14	. .	. . .	do.	Sept.	23.		
Murray Flint Glass Works, ...	Globes and shades, ...	196	9	. .	12	do.	Oct.	5,	Comply with sections 2 and 3.	
Henry H. Sheip & Co., ...	Cigar boxes, ...	191	59	. .	55	do.	Oct.	6.		
Philadelphia Manufacturing Company.	Tapestry and draperies, . .	30	35	. .	1	do.	Oct.	7,	Comply with sections 2, 3 and 18.	
William Judge & Bros., ...	Ingrain carpets, ...	150	150	. .	. . .	do.	Oct.	8.		
Yewdell & Jones Bros., ...	Worsted yarns, , ...	40	70	. .	10	do.	Oct.	8.		
Oriental Mills, ...	Upholstery and curtains, . .	150	75	. .	16	do.	Oct.	9.		
Crescent Hosiery Mills.	Hosiery, ...	33	70	. .	13	do.	Oct.	12.		
Richmond Hosiery Mills, ...	do.	122	63	. .	30	Fair,	Oct.	12,	Comply with sections 2, 3 and 10.	
Westphalia Mills.	Curtains and draperies, . . .	48	30	. .	10	do.	Oct.	13.	Comply with sections 2, 3 and 10.	
B. Wink & Weed.	Woolen goods, ...	65	35	. .	18	do.	Oct.	13.	Comply with sections 2, 3, 10, 12 and 18.	
Utility Mills, ...	Curtains and table covers, .	20	18	. .	5	Good,	Oct.	13,	Comply with sections 2 and 3.	
Standard Worsted Mill.	Cloth, cloaking and worsted yarns.	100	100	. .	20	Poor,	Oct.	14,	Comply with sections 10 and 12.	
Oxford Knitting Mills, ...	Jackets and shawls, ...	68	132	. .	5	Good,	Oct.	14.		
Enterprise Mills, ...	Tapestry Brussels, ...	10	15	. .	. . .	do.	Oct.	15,	Comply with sections 3 and 12.	
Louis Weber & Co., ...	Hosiery, ...	10	70	. .	12	do.	Oct.	16.		
Oak Mills Company.	Hosiery and underwear, . . .	140	140	. .	40	Bad, .	Oct.	16,	Comply with sections 10 and 12.	
Price & Vogt.	Fine felt hats, ...	15	15	. .	. . .	Good,	Oct.	20.		
J. B. Patterson & Co., ...	Patented novelties, ...	10	20	. .	. . .	Fair,	Oct.	26,	Comply with sections 10 and 12.	

PHILADELPHIA—*Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Lalen C. Kracher,	Ingrain carpets,	100	25	. .	3	Good.	Oct. 26.		
John Dunlap & Sons.	do.	100	100	. .	2	do.	Nov. 10.		
C. H. Masland & Sons,	do.	101	34	. .	1	do.	Nov. 12.		
Robert H. Foerderer,	Fine glazed kid.	431	1	. .	86	Fair,	Nov. 14,	Comply with sections 8, 10, 11 and 12.	
Cumberland Mills,	Cotton and woolen goods,	9	29	. .	1	Good.	Nov. 17.		
Kirk & Barnes,	do. do.	10	15	. .	. . .	do.	Nov. 17.		
Welcome Manufacturing Company,	Tickings and shirtings.	6	10	. .	. . .	do.	Nov. 17.		
James Meadowcroft & Sons,	Carpet yarns,	25	7	. .	7	do.	Nov. 18,	Comply with sections 2, 3, 8 and 12.	
Lincoln Carpet Mills,	Ingrain carpets,	19	10	. .	1	do.	Nov. 18.		
Beatty Bros.,	Woolen yarns,	60	15	. .	5	do.	Nov. 19.		
David Jackson,	Ingrain carpets,	25	40	. .	4	do.	Nov. 20,	Comply with sections 2, 3 and 18.	
Hyndman & Moore,	Curtains and draperies,	40	50	. .	7	do.	Nov. 20,	Comply with sections 2, 3 and 18.	
Fred. W. Simons,	Hosiery,	6	46	. .	10	Fair,	Nov. 21,	Comply with sections 10 and 11.	
John G. Carruth & Co.,	Worsted. woolen and cotton goods.	47	28	. .	. . .	Good,	Nov. 21.		
M. Lafferty.	Woolen yarns,	22	12	. .	6	do.	Nov. 21.		
Walker & Richman,	Cotton yarns,	12	6	. .	4	do.	Nov. 21.		

CRESCENTVILLE, PHILADELPHIA.

Finley & Co.,	Sash cord,	27	27	..	27	Good,	Sept. 10.		

HESTONVILLE, PHILADELPHIA.

S. Yewdell,	Worsted yarns,	38	12	..	2	Good,	Oct. 9,	Comply with sections 2, 3 and 18.	

MANAYUNK, PHILADELPHIA.

Thos. Kenworthy & Bro.,	Worsted yarns,	40	80	..	20	Good,	Aug. 6,	Comply with section 12,	Complied.
C. L. Kelley & Co.,	Plush goods,	22	23	..	1	do.	Aug. 6.		
Carter & Lord.	Blankets,	62	24	..	1	do.	Aug. 6.		
Jos. M. Adams,	Carpet yarns,	83	27	..	...	do.	Aug. 27.	Comply with sections 7. 8 and 12.	Complied.
Progress Mills,	Carpet yarns and blankets,	100	50	..	4	Fair,	Sept. 14,	Comply with sections 2, 3 and 10,	Complied.
A. Platt & Bro.	Woolen, merino and cotton yarns.	85	40	..	27	do.	Sept. 14,	Comply with sections 10 and 12.	
Wm. Holt & Son,	Yarns,	46	9	..	8	Good,	Sept. 16,	Comply with sections 2, 3 and 12,	Complied.
Baker, Holt & Co.,	Plushes,	3	17	..	2	do.	Sept. 16,	Comply with sections 2, 3, 10 and 12,	Complied.
Harmony Mills,	Woolen and cotton yarns,	37	1	..	14	do.	Sept. 16,	Comply with sections 2, 3 and 8,	Complied.
Roxborough Mills,	Yarns and cotton goods,	38	67	..	5	do.	Sept. 18.	Comply with sections 2, 3 and 12,	Complied.
Freeland Mills,	Carpet yarns,	50	15	..	...	do.	Sept. 18,	Comply with section 3,	Complied.
Wm. E. Montague,	Cotton yarns,	15	10	..	4	do.	Oct. 16,	Comply with sections 2, 3. 8, 12 and 18.	
Mt. Vernon Worsted Mills,	Worsted yarns,	85	290	..	90	do.	Oct. 21,	Comply with sections 8 and 12.	
Pekin Mills,	Cotton and woolen goods,	40	80	..	10	Bad,	Oct. 21,	Comply with sections 8, 10. 11 and 12.	
A. M. Patton,	do. do.	60	65	..	11	Good,	Oct. 26.		
Robt. Wild's Sons,	Carpet yarns,	36	14	..	...	do.	Oct. 27.		
Wm. Holt & Son.,	Cotton and woolen goods,	110	70	..	34	do.	Oct. 27.		

FRANKFORD, PPILADELPHIA.

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Frankford Hosiery Mill,	Hosiery,	50	240	. .	50	Good,	Sept. 10.		
Walker & Righman,	Cotton yarns,	32	28	. .	6	do.	Sept. 10.		
Miller Lock Company,	Locks,	69	16	. .	1	do.	Sept. 11.		
Wm. Whitaker & Sons,	Tickings and yarns,	61	104	. .	23	do.	Sept. 11,	Comply with sections 8 and 12.	Complied.
Robert McGowan,	Cotton and woolen goods,	22	13	. .	1	do.	Oct. 20,	Comply with sections 2, 3, 11 and 18.	
Ainsworth & Sharp,	Cotton, woolen, worsted and silk goods.	10	30	. .	. . .	do.	Oct. 20,	Comply with sections 3, 11 and 12.	
Clarke & O'Neil,	Damask table covers,	47	45	. .	. . .	do.	Oct. 20.		
James Pollock,	Table covers, napkins, etc.,	40	35	. .	2	do.	Oct. 20.	Comply with sections 2, 3, 11 and 12.	
S. W. Evans & Son,	Umbrella mountings, etc.,	175	50	. .	88	Fair,	Nov. 11,	Comply with section 10.	
Robert Dallas,	Cotton and woolen goods,	6	27	. .	2	Good,	Nov. 13.		
Joseph Greer,	Worsted goods,	115	110	. .	10	do.	Nov. 13.		
Warwick, Newberry & Co.	Umbrella and parasol sticks,	78	12	. .	6	Fair,	Nov. 14,	Comply with sections 2, 3, 10, 11 and 18.	
Samuel J. Campbell,	Cotton and woolen goods,	30	32	. .	1	Good.	Nov. 14,.		
Wm. P. Firth, Jr.. & Co..	Cotton goods,	110	140	. .	10	do.	Nov. 14.		
Pearson & Co..	Ginghams and dress goods,	17	12	. .	2	do.	Nov. 25,	Comply with sections 2. 3, 11 and 18.	
Wm. Whitaker & Sons.	Carpets tickings, cotton and woolen goods.	48	92	. .	27	do.	Nov. 25.		

WAYNE JUNCTION, PHILADELPHIA.

New Glen Echo Mills,	Carpets,	150	250	..	75	Good,	Nov. 23.		
W. G. Chittick & Son,	Worsted and woolen goods,	100	20	..	...	do.	Nov. 23,	Comply with sections 3, 11 and 18.	

FALLS OF SCHUYLKILL.

John & James Dobson,	Carpets and plush,	1,229	614	..	300	Good.	Oct. 22.		
John & James Dobson,	do. do.	1,229	614	..	300	do.	Oct. 22,	Comply with sections 8 and 12.	
John & James Dobson,	Cloth,	152	23	..	12	do.	Oct. 23.		
John Dobson,	Blankets.	482	201	..	97	do.	Oct. 23.		

NICETOWN, PHILADELPHIA.

Edward Noon & Son.	Hosiery.	15	35	..	...	Good,	Oct. 15,	Comply with sections 3, 12 and 18.	

EDEN, BUCKS COUNTY.

Eden Manufacturing Company,	Draperies and curtains,	52	8	..	2	Good,	Aug. 11.	Comply with sections 2, 3 and 18.	Complied.

HUMESVILLE

E. Fricke & Co.,	Rope and twine,	18	7	..	3	Good,	Aug. 11,	Comply with sections 2, 3, 11, 12 and 18.	

GERMANTOWN, PHILADELPAIA.

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
John Greaves & Bro.,	Cotton and woolen yarns,	23	7	. .	9	Good,	Oct. 5,	Comply with sections 2, 3 and 18.	
John S. Palmer & Son,	Hosiery,	7	28	. .	1	do.	Oct. 5.		
Ben. W. Greer,	Cotton and woolen goods,	130	70	. .	12	do.	Oct. 5.		
Thomas Fling & Bro.,	Hosiery,	6	15	. .	1	do.	Oct. 5.		
Bradbury Bros.,	Table covers and upholstery,	55	80	. .	14	do.	Oct. 5.		
Atlantic Knitting Mills,	Underwear,	12	113	. .	8	do.	Oct. 6.		
Woodcock, Hall & Co.,	Hosiery,	8	12	. .	1	do.	Oct. 6,	Comply with sections 2, 3 and 18.	
B. Hamill & Co.,	Woolen and merino yarns.	54	6	. .	6	do.	Oct. 15.		
Wilson. Jones & Co.,	Cotton yarns,	9	6	. .	4	do.	Nov. 24,	Comply with sections 2, 3 and 18.	
Joseph Scatchard's Sons,	Woolen and merino yarns,	138	2	. .	24	Fair,	Nov. 24,	Comply with sections 2, 3. 8, 10, 12 and 18.	
Germantown Hosiery Mill,	Knit goods and hosiery,	100	300	. .	20	Good.	Nov. 24.		
J. Randall & Bros.,	Woolen yarns.	41	4	. .	6	do.	Nov. 24.		
Isaac Dalzell.	Hosiery,	20	25	. .	3	do.	Nov. 27,	Comply with sections 2, 3 and 18.	
John Ballantyne,	do.	23	42	. .	. .	do.	Nov. 27.		
Germantown Spinning Company,	Cotton yarns.	34	28	. .	15	do.	Nov. 27.		
Standard Knitting Mills,	Knit goods and hosiery,	50	30	. .	2	do.	Nov. 27,	Repair window in water closets.	
Eagle Knitting Mills,	Knit goods.	15	45	. .	3	do.	Nov. 27,	Comply with section 12.	

STATISTICS OF FACTORIES VISITED—DISTRICT No. 2.

Harrisburg, Dauphin County.

Harrisburg Silk Mill,	Silk throwing and weaving,	35	200	..	6	Good,	June 4.	Comply with sections 2, 3 and 12,	Complied.

McSherrystown, Adams County.

F. K. Smith,	Cigars.	27	18	..	1	Good,	June 16.		
Charles H. Bushbey,	do.	26	34	..	1	do.	June 16.		
Conewago Cigar Box Company,	Cigar boxes,	12	18	..	3	do.	June 16.		
Martin & Co.,	Cigars,	26	29	..	1	do.	June 16.		
S. L. Johns.	do.	70	65	..	3	do.	June 16.		

Irishtown, Adams County.

S. L. Johns,	Cigars.	20	30	..	5	Good,	June 17.		

Hanover, York County.

Hanover Shoe Company,	Ladies' and children's shoes,	25	18	..	...	Good,	June 17.		
S. H. Bechtel & Son,	Cigar boxes and hosiery,	7	19	..	1	do.	June 17.		
Hanover Rope and Twine Company,	Rope and twine,	21	14	..	4	do.	June 17.		
Jesse Frysinger,	Cigars,	32	15	..	1	do.	June 17.		
H. A. Bair,	Cigar boxes,	7	9	..	1	do.	June 17.		
George W. Gitt,	Gloves,	8	10	..	...	do.	June 18.		

YORKANA, YORK COUNTY.

NAMES OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
R. A. Paules,	Cigars.	9	11	. .	. . .	Good.	June 24.		
J. W. Horn,	do.	25	7	. .	1	do.	June 24.		
Amos Dellinger,	do.	9	15	. .	. . .	do.	June 24.		
R. F. Strickler.	do.	14	20	. .	9	do.	June 24.		

DALLASTOWN, YORK COUNTY.

M. Hose,	Cigar boxes.	8	10	. .	. . .	Good,	June 18.		
Adam Kohler,	Cigars,	17	10	. .	. . .	do.	June 18.		
C. Kohler & Co.,	Cigar boxes,	11	14	. .	3	do.	June 18.		

EAST PROSPECT, YORK COUNTY.

Helder & Lohn,	Cigars,	15	10	. .	5	Good,	June 25.		
C. J. Sitler,	do.	15	20	. .	. . .	do.	June 25.		

YORK, YORK COUNTY.

David Gable,	Cigars,	45	45	..	5	Good,	June 8.		
P. C. Weist & Co..	Candies,	50	264	..	157	do.	June 8.		
York Wire Cloth Company,	Wire cloth,	16	31	..	...	do.	June 8.		
Holtzman Manufacturing Company,	Underwear,	3	89	..	7	do.	June 8,	Comply with section 2,	Complied.
Schriver & Pfleger,	Cigars,	25	25	..	6	do.	June 8,	Comply with section 2.	Complied.
Myers & Adams,	do.	95	35	..	10	do.	June 9.		
Kate Bayler.	do.	29	26	..	5	do.	June 9.		
C. A. Bayler,	do..	35	50	..	24	do.	June 9.		
S. S. Flinchbaugh.	Cigars and cigar boxes,	15	9	..	3	do.	June 9.		
A. K. Bayler,	Cigars,	26	14	..	3	do.	June 9.		
H. W. Heffner,	Cigar boxes,	23	24	..	9	do.	June 9,	Comply with section 2.	Complied.
Thomas & Winters,	do.	9	10	..	3	do.	June 9.		
York Match Company,	Matches.	19	93	..	11	do.	June 9.		
York Candy Company,	Candies,	6	18	..	10	do.	June 10,	Comply with sections 2 and 3,	Complied.
Jacob Mayer,	Cigars.	90	30	..	20	do.	June 19.		
Jacob Mayer.	Cigar boxes,	6	10	..	...	do.	June 19.		
J. K. Pfaltzgraff.	Cigars,	17	8	..	3	do.	June 19.		

SPRING GROVE, YORK COUNTY.

P. H. Gladfelter,	Paper,	105	34	..	...	Good,	June 18.		

LOGANVILLE, YORK COUNTY.

D. B. Goodling,	Cigars,	3	10	..	...	Good,	June 23.		

GLEN ROCK, YORK COUNTY.

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Radcliffe & Shaw,	Rope.	8	10	. .	3	Good,	June 26.		

PARADISE, YORK COUNTY.

Prus Olp,	Cigars.	8	10	. .	. . .	Good,	June 23.		

WRIGHTSVILLE, YORK COUNTY.

Gray and Kagle Shoe Company,	Ladies' and children's shoes,	30	20	. .	. . .	Good,	June 10.		
Jacob Kline,	Cigars.	6	27	. .	3	do.	June 10.		
D. S. Detweiler,	do.	28	25	. .	8	do.	June 10,	Comply with section 2,	Complied.
S. R. Kocher & Co.,	do.	20	16	. .	7	do.	June 10.		

EPHRATA, LANCASTER COUNTY.

A. W. Mentzer,	Cigars,	35	25	. .	. . .	Good,	June 2.		
Henry Stroll,	do.	22	18	. .	. . .	do.	June 2.		
J. Cooper,	do.	35	20	. .	3	do.	June 2.	Guard hatchway at hoisting machine,	Complied.
I. R. Brown,	Cigar boxes.	6	10	. .	2	do.	June 2.		
Martin Kingport.	Cigars,	90	50	. .	31	do.	June 2.		
Martin Kingport.	Cigar boxes.	10	15	. .	1	do.	June 2.		

MANHEIM, LANCASTER COUNTY.

C. F. Fisher,	Cigars,	17	9	..	1	Good.	June 3.		
T. S. Beck.	do.	15	10	..	...	do.	June 3.		
Enterprise Hosiery Company,	Hosiery,	11	69	..	11	do.	June 3.		

MARTINDALE, LANCASTER COUNTY.

Curtis Richmond,	Cigars.	15	12	..	4	Good,	June 11.		

NEW HOLLAND, LANCASTER COUNTY.

Dillworth Bros. Mill No. 2,	Cigars,	15	15	..	2	Good,	June 12.		
Dillworth Bros. Mill No. 1,	do.	24	16	..	...	do.	June 12.		

TERRE HILL, LANCASTER COUNTY.

S. S. Watts,	Cigars,	20	20	..	9	Good,	June 11,	Comply with section 2,	Complied.
Dillworth Bros.	do.	35	35	..	15	do.	June 11,	Comply with section 2,	Complied.
A. M. Cline.	do.	45	50	..	...	do.	June 11.		
R. H. Davis,	do.	12	12	..	3	do.	June 11.		
Jesse Showalter,	do.	15	20	..	...	do.	June 11.		

LANCASTER.

Conestoga Cotton Mill No 2,	Cotton weaving and spinning,	180	300	..	40	Good,	June 5.		

SCRANTON.

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
D., L. & W. Car Shops,	Building and repairing cars,	600	....	..	6	Good.	Oct. 12.		
D., L. & W. Railroad Company,	Repairing locomotives,	415	....	..	6	do.	Oct. 12.		
Garney, Brown & Co.,	Cigars,	67	18	..	2	do.	Oct. 12.		
Scranton Stove Works,	Stoves,	175	....	..	175	do.	Oct. 13.		
Ansley Planing and Lumber Co.,	House building materials,	19	1	..	...	do.	Oct. 13.		
John Benore & Son,	Sash doors and blinds,	60	....	..	...	do.	Oct. 13.		
Scranton Glass Company,	Glass bottles,	109	....	..	69	do.	Oct. 20.		
Green Ridge Iron Works,	Iron,	45	....	..	...	do.	Oct. 20.		
Green Ridge Lumber Company,	Wood working,	10	....	..	...	do.	Oct. 20.		
Freeman Manufacturing Company,	Overalls and sack coats,	....	30	..	...	do.	Oct. 21.		
Scranton Wood Working Company,	Sash doors and blinds,	30	....	..	1	do.	Oct. 21.		
Engle & Tiger,	Shirts and underwear,	5	5	..	...	do.	Oct. 21.		
Louis Siff & Bros.,	Pantaloons,	8	8	..	1	do.	Oct. 21.		
Ladies' Underwear Factory,	Ladies' underwear,	....	100	..	...	do.	Oct. 21.		
Scranton Forging Company,	Forging,	60	....	..	...	do.	Oct. 21.		

EAST AND WEST PITTSTON.

Pittston Planing Mill,	Sash doors and blinds,	46		2	Good,	Oct. 22.		
A. E. Brown,	Dry goods,	11	19	2	do.	Oct. 22.		
Pittston Stove Company,	Stoves, ranges and furnaces,	80		3	do.	Oct. 22.		
West End Planing Mill,	Wood working,	31	1		do.	Oct. 22.		
Vulcan Iron Works,	Boilers and mining machinery.	80			do.	Oct. 23.		
Exeter Machine Works,	Engines and boilers.	40			do.	Oct. 23.		

WILKES-BARRE.

Langfield, Lazerus & Co.,	Dry goods,	8	12	6	Fair,	Nov. 4,	Comply with sections 1, 2, 3 and 10.	
Isaac Long,	Dry goods and carpets,	15	24	7	Good,	Nov. 5.		
Sheldon Axle Company,	Carriages and wagon axles,	350		8	do.	Nov. 5.		
Conrad Lee,	Building materials,	48		12	do.	Nov. 5.		
Oscar Smith Carpet Cleaning Works,	Carpet cleaning,	6	3	1	do.	Nov. 6.		
David Davis,	Shoes,	47	3	10	do.	Nov. 6.		
Newell Clothing Company,	Workman's clothing,	7	65	1	do.	Nov. 6.		
Wilkes-Barre Steam Laundry,	Laundry,	3	15		do.	Nov. 9.		
H. L. Moore,	Crackers,	12			do.	Nov. 9.		
L. Fisch.	Cigars,	4	8		do.	Nov. 9.		
Hazard Manufacturing Company,	Rope,	135			do.	Nov. 9.		
Galland Bros. & Co.,	Ladies' underwear,	20	300	60	do.	Nov. 9.		
W. B. Bertels,	Stoves and tinware.	30			do.	Nov. 10.		
Burdick Shirt Factory,	Shirts and underwear.		10		do.	Nov. 10.		

YORK, YORK COUNTY.

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Jacob A. Mayer,	Cigars and cigar boxes,	65	35	. .	15	Good.	Nov. 23.		
J. K. Pfaltzgraff,	Cigars,	28	7	. .	4	do.	Nov. 23.	Designate water closets.	
Myers & Adams,	do.	161	24	. .	5	do.	Nov. 23,	Railing on stairway.	
S. S. Gable,	do.	18	22	. .	11	do.	Nov. 23,	Comply with section 2.	
Holtzman Manufacturing Company,	Underwear.	3	67	. .	4	do.	Nov. 24,	Comply with sections 2 and 3.	
Schriver & Pflieger,	Cigars,	5	27	. .	1	do.	Nov. 24.		
E. Myers,	Cigar boxes,	7	11	. .	. . .	do.	Nov. 24.		
F. E. Myers,	Cigars,	5	12	. .	4	do.	Nov. 24,	Comply with sections 2 and 3.	
O. P. Walters & Co.,	Candy,	4	6	. .	2	do	Nov. 24,	Comply with sections 2 and 3.	
O. P. Walters & Co.,	do.	2	17	. .	6	do.	Nov. 24,	Comply with sections 2 and 3 and designate water closets.	
Thomas & Winter,	Cigar boxes,	8	12	. .	4	do.	Nov. 24,	Comply with section 2.	
York Match Company,	Matches,	28	115	. .	16	do.	Nov. 24.		
P. C Wiest & Co.,	Candies.	100	350	. .	79	do.	Nov. 24.		
York Wire Cloth Company,	Screen doors and wire cloths,	20	30	. .	. . .	do.	Nov. 24.		
J. W. Hartley & Co.,	Candy.	8	40	. .	9	do.	Nov. 25.		
A. K. Bayler,	Cigars,	26	18	. .	5	do.	Nov. 25,	Comply with section 2.	
H. W. Heffener,	Cigar boxes,	26	26	. .	12	do.	Nov. 25.		
C. A. Bayler,	Cigars.	15	48	. .	9	do.	Nov. 25.		

Ka e Bayler,	do.	28	30	..	5	do.	Nov. 25.		
C. F. Hoffmeyer,	Candy,	5	15	..	3	do.	Nov. 25,	Comply with sections 2 and 3.	

PLYMOUTH, LUZERNE COUNTY.

Howell's Mining Drill Company,	Mining drills,	15	....	..	...	Good,	Nov. 11.		
Powell's Squib Factory,	Mine squibs,	2	71	..	32	do.	Nov. 11,	Comply with sections 2 and 3,	Complied.
Pioneer Knitting Mill,	Knitting hose,	10	125	..	68	do.	Nov. 12.		
Plymouth Planing Mill Company,	Lumber,	11	....	..	...	do.	Nov. 12.		
Wyoming Valley Suit Company,	Men's and ladies' garments,	5	22	..	1	do.	Nov. 12.		

SUNBURY.

Planing Mill, Table Works and Coffin Factory.	Tables, coffins, etc.,	96	4	..	8	Good,	Nov. 18,	Comply with sections 2 and 3.	

BLOOMSBURG, COLUMBIA COUNTY.

Bloomsburg Car Company,	Building cars,	100	....	..	...	Good,	Nov. 13.		
Harman & Hassard,	Foundry,	40	....	..	...	do.	Nov. 13.		
Fountain Pen Factory,	Fountain pens,	8	8	..	...	do.	Nov. 13.		
Bloomsburg Silk Mill Company,	Silk throwing and weaving,	25	45	..	7	do.	Nov. 13,	Comply with sections 2 and 3, and erect fire escape.	
Bloomsburg Carpet Works,	Ingrain carpets,	70	20	..	...	do.	Nov. 13.		
E. C. Caswell & Co.,	Woolen goods,	24	24	..	3	do.	Nov. 13.		

BLOOMSBURG—*Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Nail Furnace Company, ...	Iron, ...	40	. . . .	. .	. . .	Good,	Nov. 13.		
Hess Iron Manufacturing Company,	Foundry and machine shop, . .	12	. . . .	. .	. . .	do.	Nov. 13.		
J. W. Mears & Co., ...	Washing machines, ...	16	. . . .	. .	. . .	do.	Nov. 14.		
School Furnishing Company.	School furniture, ...	100	. . . .	. .	2	do.	Nov. 14.		
Bloomsburg Worsted Mill, ...	Worsted yarns, ...	21	11	. .	14	do.	Nov. 14.		

DANVILLE, MONTOUR COUNTY.

Danville Suspender Company, . . .	Suspenders, ...	1	10	. .	1	Good,	Nov. 17,	Comply with sections 2 and 3.	
North Branch Steel Company, . . .	Rolling steel rails, ...	210	. . . .	. .	10	do.	Nov. 17,	Comply with sections 2 and 3, ...	Complied.
Mahoning Rolling Mill Company, .	Castings and machinery, . . .	400	. . . .	. .	13	do.	Nov. 17,	Comply with sections 2 and 3.	
Montour Iron and Steel Company, .	Iron, steel rails, bars, etc., .	750	. . . .	. .	39	do.	Nov. 17.		

CATAWISSA, COLUMBIA COUNTY.

Wm. F. Cramer, ...	Shoes, ...	54	31	. .	3	Good,	Nov. 16,	Comply with sections 2 and 3, ...	Complied.

HALIFAX, DAUPHIN COUNTY.

Halifax Shoe Manufacturing Co.,	Shoes,	21	20	..	2	Good,	Nov. 20,	Comply with sections 2 and 3,	Complied.

MILLERSBURG, DAUPHIN COUNTY.

Kleim, Neitz & Co.,	Carpets,	40	....	..	2	Good,	Nov. 19.		

STATISTICS OF FACTORIES VISITED—DISTRICT No. 3.

PITTSBURGH.

Collins Cigar Company,	Cigars and tobies,	16	211	..	87	Good,	June 11.		
Dunlap & Co.,	Tin and japan ware,	25	60	..	...	do.	June 13.		
Jos. Horne & Co.,	Dry goods,	251	161	..	69	do.	June 13.		
Hostetter Company,	Bottling department,	38	....	..	10	do.	June 22.	Gates to elevator,	Complied.
Scutt Wire Company,	Barbed wire nails, etc.,	260	140	..	22	do.	June 23.		
Jos. Eichbaum,	Store and bindery,	80	27	..	...	do.	June 24.	Gates to elevator.	Complied.
James McClurg & Co.,	Confectionery,	26	14	..	...	do.	June 24.		
Wm. McCully & Co.,	Glass bottles,	110	....	..	60	do.	June 24.		
Wm. McCully & Co.,	do.	140	....	..	63	do.	June 24.		
Wm. McCully & Co.,	do.	50	....	..	50	do.	June 24.		
Park Bros. & Co.,	Steel and copper,	2,100	....	..	63	do.	June 25.		
Star Encaustic Tile Works,	Flooring tile,	17	23	..	3	do.	June 25.		

PITTSBURGH—*Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Geo. F. McDonald,	Confectionery.	17	18	. .	. . .	Good,	June 25,	Gates to elevator,	Complied.
P. T. Veach & Co.,	Paper sacks,	13	12	. .	. . .	do,	June 25.		
Oliver Iron and Steel Company,	Iron, steel nails, etc.,	2,096	110	. .	49	do.	June 26.		
Armstrong Bros. & Co.,	Corks,	461	589	. .	85	do.	June 26.		
Mohn's Electric Laundry,	Laundry,	6	54	. .	1	do.	June 27.		
U. S. Baking Company,	Bakery,	175	175	. .	34	do.	June 30.		
Jos. Klee & Sons,	Clothing,	5	45	. .	1	do.	June 30,	Erect fire escape,	Complied.
Klee & Talk,	do.	6	45	. .	3	do.	June 30.		
James McKay & Co.,	Chains,	55	. . . .	. .	13	do.	July 1.		
Walker Paper Box Factory.	Paper boxes,	7	35	. .	7	do.	July 1.		
Sampliner & Rich,	Cloaks,	10	40	. .	. . .	do.	July 1,	Provide better ventilation,	Complied.
Mrs. C. Weisser,	Dry goods,	25	25	. .	2	do.	July 2.		
The People's Store,	Dry goods, shoes, etc.,	71	69	. .	7	do.	July 2.		
Wm. Price's Shirt Factory,	Men's shirts,	. . . .	12	. .	. . .	do.	July 7.		
Fleming & Hamilton,	Tin and japan ware,	70	30	. .	40	do.	July 7.		
Kaufman & Bro.,	Clothing,	183	47	. .	42	do.	July 8.		
Grabonsky's Hat Factory,	Repairing men's hats,	5	13	. .	. . .	do.	July 8.		
Excelsior Steam Laundry,	Laundry,	8	10	. .	. . .	do.	July 8.		
Stevenson & Foster,	Printing and binding,	52	16	. .	7	do.	July 8.		
Palace Steam Laundry,	Laundry,	7	18	. .	1	Bad, .	July 8,	Comply with sections 1, 2, 3 and 10,	Complied.

Reymer & Bro.,	Confectionery,	35	40			Good.	July	
Pittsburgh Tube Works,	Wrought iron pipes,	394			28	do.	July	9.
Pennsylvania Tube Company,	do. do.	966			18	do.	July	9.
Banar & Wieland,	Corks,	15	25		3	do.	July	10.
Standard Underground Cable Co.,	Cables and pipes,	83	32		1	do.	July	0.
W. P. Bennett,	Blank books and binding,	22	18			do.	July	10
Sampliner & Rich,	Cloaks, etc.,	20	63			do.	July	16.
Crescent Steel Works,	Steel,	542			10	do.	July	20.
J. Jarvis Adams & Co.,	Foundry,	130			10	do.	July	22.
Westinghouse Electric Company.	Electric goods,	573			16	do.	July	22.
Biber & Easton,	Dry goods,	27	18			do.	July	21.
Rex Box Factory,	Wood and paper boxes,	15	29		5	do.	July	21.
William Clark & Sons,	Iron collintiers,	550			30	do.	July	27.
J. M. Guskeys,	Clothing store,	286	14		17	do.	July	28.
Alex. Matchett & Son,	Paper boxes,	5	15		5	do.	July	28.
Palace Steam Laundry.	Laundry,	5	13			do.	July	28.
Logan & Co.,	Mattresses,	27	13			do.	July	29.
Owen & Co.,	Cigars,	7	23		5	do.	July	29.
Collins & Wright.	Tin and plated ware,	21	10		1	do.	July	30.
Hostetter Company,	Bitters and printing,	20	40			do.	Aug.	25.
Dilworth Bros. & Co.,	Roasting and packing coffee,	15	20			do.	Aug.	26.
R. & W. Jenkinson,	Cigars and tobies,	50	150		6	do.	Aug.	26.
Pennsylvania Paper Box Company,	Paper boxes,	10	40		4	do.	Aug.	26.
Heintz Bros. Company,	Pickles and catsup,	15	20		1	do.	Aug.	28.
Park Bros. & Co.,	Steel and copper,	2,100			70	do.	Aug.	28.
Owen & Co.,	Cigars,	6	24		5	do.	Aug.	29.
S. Kaufman's Sons,	Pantaloons,	10	60			Fair,	Sept.	3, Comply with sections 7 and 10.
Collins Cigar Company,	Cigars and tobies,	217	202		95	Good,	Sept.	3.
Rex Box Factory,	Wood and paper cigar boxes,	15	30		7	do.	Sept.	4.

PITTSBURGH—*Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
A. Walker & Son,	Paper boxes,	6	34	. .	2	Fair,	Sept. 4,	Comply with sections 10 and 12,	Complied.
Klee & Talk,	Pantaloons,	5	55	. .	3	Bad,	Sept. 4,	Comply with section 10,	Complied.
Jos. Klee & Sons,	do.	56	4	. .	1	do.	Sept. 4,	Comply with sections 7 and 10.	Complied.
Reymer & Bro.,	Confectionery,	40	35	. .	1	Good,	Sept. 5.		
James McClurg & Co.,	do.	14	18	. .	1	do.	Sept. 5.		
Sampliner & Rich,	Cloaks,	40	50	. .	1	Bad,	Sept. 5,	Comply with section 10.	Complied.
J. M. Guskeys,	Clothing store.	169	11	. .	17	do.	Sept. 8,	Comply with section 10.	Complied.
Fleming & Hamilton,	Tin and japanned ware,	70	30	. .	20	Good.	Sept. 8,	Comply with section 12.	
Stevenson & Foster,	Printing,	42	16	. .	7	do.	Sept. 8,	Erect fire escape,	Complied.
Baner & Wieland.	Corks,	11	17	. .	4	do.	Sept. 8.		
Hostetter Company,	Printing,	20	40	. .	. . .	do.	Sept. 8.		
Star Encaustic Tile Company,	Tile,	17	21	. .	3	do.	Sept. 9.		
Palace Steam Laundry,	Laundry,	6	13	. .	. . .	Bad,	Sept. 9.	Comply with section 10.	Complied.
Pearl Laundry Company,	do.	1	32	. .	1	Good.	Sept. 9.		
George McDonald,	Confectionery,	5	17	. .	. . .	do.	Sept. 10.	Erect fire escape.	
Owen & Co.,	Cigars,	4	26	. .	5	Fair,	Sept. 10,	Cleanse and designate water closets,	Complied.
Heintz Bros. & Co.,	Pickling.	9	18	. .	. . .	Good,	Sept. 10.		
Weyman & Bro.,	Tobacco and snuff,	50	35	. .	. . .	do.	Sept. 11.		
W. N. Matchneer,	Boxes,	20	15	. .	8	Fair,	Sept. 15.	Comply with section 10,	Complied.
Pennsylvania Paper Box Company,	do.	10	40	. .	4	Good,	Sept. 15.		

Barnes Bros. (Troy Laundry),	Laundry,	20	60	..	7	Fair,	Sept. 17,	Comply with section 12,	Complied.
Electric Laundry,	do.	5	55	..	4	Good,	Sept. 17,	Erect fire escape,	Complied.
R. & W. Jenkinson,	Cigars and tobies,	70	80	..	5	do.	Sept. 21.		
Dilworth Bros.,	Coffee roasting and packing.	17	21	..	...	do.	Sept. 21.		
Fleishman & Co.,	Dry goods, millinery, etc.,	30	90	..	29	Bad,	Sept. 21,	Comply with section 10,	Complied.
Armstrong & Bro.,	Corks,	346	495	..	112	Good,	Sept. 23.		
United States Baking Co. (Marvins),	Bakery,	160	180	..	28	do.	Sept. 23.		
John Dunlap & Co.,	Tin shop,	55	39	..	...	do.	Sept. 23.		
Henry Holtzman & Sons,	Piano covers,	15	20	..	4	Fair.	Sept. 23.	Comply with sections 1, 2, 3, 10 and 11,	Complied.
Jos. Horn & Co.,	Dry goods, etc.,	150	175	..	57	Good.	Sept. 24.		
Mrs. C. Weisser,	do.	25	25	..	2	do.	Sept. 24.		
Campbell & Dick,	do.	79	46	..	8	do.	Sept. 24.		
J. Kaufman & Bro.,	Clothing and furnishing store,	202	70	..	42	Fair,	Sept. 24,	Comply with sections 10 and 12.	
Horne & Ward,	Trimming and fancy store,	42	45	..	15	Good,	Sept. 28.		
Danzinger & Co.,	Fancy goods,	15	165	..	21	do.	Sept. 28.		
Standard Underground Cable Co.,	Electric cables, etc.,	75	25	..	5	do.	Sept. 28,	Guard elevators.	
United States Glass Co. (Factory L),	Glass tableware,	188	12	..	41	do.	Sept. 28.		
Rosenbaum & Co.,	Fancy goods,	20	80	..	3	do.	Sept. 28.		
East End Steam Laundry,	Laundry,	11	17	..	...	do.	Sept. 30,	Designate water closets,	Complied.
S. D. Ache & Co.,	Confectionery,	23	12	..	...	do.	Sept. 30.		
Pittsburgh Tube Works,	Wrought iron pipes,	400	....	..	28	do.	Oct. 8.		
Pennsylvania Tube Works,	do. do.	960	....	..	...	do.	Oct. 8.		
Camp & Wilson,	Cigars and tobies,	21	17	..	...	Fair,	Oct. 12,	Comply with sections 7, 10 and 12.	
Electric Laundry,	Laundry,	7	53	..	1	Good,	Oct. 20.		
J. T. & A. Hamilton,	Bottles,	206	....	..	107	do.	Oct. 20.		
W. H. Hamilton & Co.,	Glass bottles,	283	....	..	104	do.	Oct. 21.		
S. Jarvis Adams & Co.,	Foundry,	130	....	..	14	do.	Oct. 22.		
Star Brick Works,	Fire brick, etc.,	210	....	..	60	do.	Oct. 22.		
Jos. Eichbaum & Co.,	Printing and binding,	74	26	..	...	do.	Oct. .		

PITTSBURGH—*Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Tibby Bros.,	Glass bottles,	205	....	..	47	Good,	Nov. 4.	Comply with sections 2 and 3.	
United States Glass Company,	Glass tableware.	224	26	..	56	do.	Nov. 9.		
M. Oppenheimer,	Clothing,	25	75	..	...	do.	Nov. 9.		
Wormser Glass Company,	Bottles,	64	3	..	31	do.	Nov. 10.		
Oil Well Supply Company,	Iron and pipes,	1,200	....	..	30	do.	Nov. 10.	Comply with sections 2, 3 and 12.	
United States Glass Co. (Factory B),	Glass tableware,	297	20	..	71	do.	Nov. 16.		
Oliver Iron and Steel Company,	Iron, steel, bolts, nuts, etc.,	2,080	120	..	31	do.	Nov. 17,	Comply with section 7.	
James McKay & Co.,	Chains,	60	....	..	15	do.	Nov. 18.		
Electric Laundry,	Laundry,	6	54	..	1	do.	Nov. 18.		
Fleishman & Co.	Fancy goods,	40	90	..	31	do.	Nov. 18.		
Troy Laundry,	Laundry,	19	61	..	7	do.	Nov. 18.		
C. G. Hussey & Co.,	Copper and brass plates and ware.	95	....	..	13	do.	Nov. 19,	Comply with sections 2 and 3,	Complied.
Palace Steam Laundry,	Laundry,	8	12	..	...	do.	Nov. 19.		
McCulley's Bottle House,	Glass bottles,	125	....	..	54	do.	Nov. 20.		

PITTSBURGH, SOUTHSIDE.

A. M. Byers & Co.,	Wrought iron pipes,	850	....	..	35	Good,	June 10,	Record book ordered,	Complied.
Dilworth, Porter & Co.,	Railroad and boat spikes,	500	....	..	...	do.	June 10.		

American Iron and Steel Works,	Iron and steel shafting,	3,600			122	do.	June 12.		
Ripley Glass Company,	Glass tableware,	161	14		11	do.	June 25.		
United States Glass Co. (Factory P),	do.	115	10		25	do.	Sept. 9,	Comply with section 7,	Complied.
United States Glass Co. (Factory A),	do.	132	20		16	do.	Sept. 9.		
United States Glass Co. (Factory K),	do.	214	16		45	Fair,	Sept. 15.	Comply with sections 10 and 12,	Complied.
United States Glass Co. (Factory B),	do.	177	19		60	Bad,	Sept. 16.	Comply with section 10,	Complied.
Thomas Evans & Co.,	Glass house,	500	40		55	Good,	Sept. 18.		
Hogan, Evans & Co.,	Glass chimneys,	292	8		57	do.	Sept. 18.		
Scutt Wire Company,	Barbed wire,	200	100		12	do.	Sept. 21.		
George A. Macbeth & Co.,	Glass chimneys,	430	30		47	do.	Sept. 22.	Comply with sections 3 and 12,	Complied.
Oliver Nut and Bolt Works,	Nuts and bolts,	109	124		25	do.	Sept. 22.		
United States Glass Co. (Factory F),	Glass and tableware,	164	21		9	do.	Sept. 22.		
Ihmsen & Co.,	Bottles and jars,	176	4		28	do.	Oct. 8.		
South Side Steam Laundry,	Laundry,	5	18			do.	Oct. 12.		
Eclipse Glass Works,	Bottles,	163			51	do.	Oct. 20.		
American Iron and Steel Works,	Iron and steel,	3,500			127	do.	Oct. 29,	Protection to elevators,	Complied.
Cunningham & Co.,	Glass bottles,	123			25	do.	Nov. 4.		
D. O. Cunningham,	do.	160			43	do.	Nov. 4,	Post notices,	Complied.
United States Glass Co. (Factory D),	Glass tableware,	224	26		62	do.	Nov. 6.		
A. M. Byers & Co.,	Wrought iron pipes,	850			25	do.	Nov. 17.		
United States Glass Co. (Factory P),	Glass tableware,	114	11		26	do.	Nov. 17.		

ALLEGHENY CITY.

Home Steam Laundry,	Laundry,	6	14		1	Fair,	June 11,	Comply with sections 2, 3 and 12,	Complied.
Pittsburgh Baking and Pretzel Co.,	Bakery,	4	15		4	Good,	June 23.		
Walker Soap Company,	Laundry soap and candles,	77	25			do.	June 23.		

ALLEGHENY CITY—*Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Union American Cigar Company, .	Cigars and stogies, ...	12	273	. .	78	Good.	June 29.		
Baker Chain Works, ...	Chains and agricultural implements.	300	. . . .	. .	64	do.	June 29.	Comply with section 12.	Complied.
Pennsylvania Cotton Mill, ...	Cotton cloth, ...	38	207	. .	48	do.	July 2.		
H. W. Minnemeyer, ...	Saddlery and hardware, . . .	116	. . . .	. .	22	do.	July 17.		
Western Leather Company, ...	Sole leather and counters, .	3	60	. .	23	do.	July 17.		
Keystone Laundry, ...	Laundry, ...	14	32	. .	. . .	do.	July 17.	Comply with sections 2 and 3, ...	Complied.
Lindsey & McCutcheon, ...	Iron, ...	300	. . . .	. .	18	do.	July 17.	Comply with section 12.	Complied.
Lutz Bros., ...	Pickling and preserving, . . .	18	12	. .	. . .	do.	July 18.		
Wrigley Box Factory, ...	Paper boxes, ...	6	19	. .	6	do.	July 21.		
Rankins & Holdship, ...	Tinware, ...	16	33	. .	1	do.	July 21.		
Peiffer's Allegheny Steam Laundry.	Laundry, ...	11	42	. .	. . .	do.	July 27.		
Pittsburgh Forge and Iron Co., . .	Iron.	600	. . . .	. .	22	do.	Aug. 25.		
Union American Cigar Company, .	Cigars and tobies.	11	269	. .	80	do.	Aug. 25.		
Wentz, Stewart & Anderson. . . .	do. do.	7	189	. .	39	do.	Aug. 28.		
Western Leather Company, ...	Upper and sole leather, . . .	5	65	. .	20	do.	Sept. 2.		
The Heinz Company.	Pickles and preserves, ...	150	350	. .	61	do.	Sept. 2.		
Union American Cigar Company. .	Cigars, ...	12	271	. .	58	do.	Sept. 10.		
Wentz, Stewart &Anderson, . . .	Cigars and stogies, ...	7	189	. .	39	do.	Sept. 11.		
Pennsylvania Cotton Mill, ...	Cotton cloth, ...	25	220	. .	57	do.	Sept. 11.		

Pittsburgh Baking Company,	Pretzels and crackers,	8	15	..	7	Fair.	Sept. 17,	Comply with sections 10 and 12,	Complied.
Walker Soap Company,	Laundry soaps,	69	22	..	..	Good,	Sept. 17.		
M. Brilles & Co.,	Cigars,	15	115	..	15	Bad,	Sept. 18,	Comply with sections 10 and 12,	Complied.
Rankin & Holdship,	Tinware,	19	31	..	1	Good,	Sept. 18.		
Schimmel Preserving Company.	Pickles and catsup,	25	26	..	2	do.	Sept. 18.		
McClurg & Co.	Bakery,	20	20	..	...	Fair	Sept. 18.		
Conroy & Prugh.	Mirrors,	24	33	..	20	Good,	Sept. 18.		
Douglass & Mackie,	Dry goods.	26	14	..	6	do.	Sept. 25.		
Boggs & Buhl.	do.	110	180	..	43	do.	Sept. 25.		
McKinney Manufacturing Co.,	Hinges.	130	45	..	91	do.	Oct. 29.		
Keystone Laundry,	Laundry,	11	27	..	...	do.	Oct. 29.		
U. S. Baking Co. (Head Branch),	Bakery,	36	20	..	...	do.	Nov. 3.		
Lindsey & McCutcheon.	Rolling mill,	325	....	..	20	do.	Nov. 3.		
Rankin & Holdship,	Tinware,	17	33	..	1	Fair,	Nov. 3,	Cleanse water closets,	Complied.
J. Wrigley & Co.,	Paper boxes,	4	24	..	13	Good,	Nov. 5.		
H. W. Minnemyer,	Hardware.	110	....	..	24	do.	Nov. 5.		
Pittsburgh Brass Company,	Brass lamps, etc.,	192	4	..	46	do.	Nov. 5.	Comply with section 12.	
Baker Chain Works,	Chains and agricultural implements.	300	....	..	54	do.	Nov. 10.		
Linniken's Hat Bleachery,	Bleaching and repairing,	5	50	..	...	do.	Nov. 20,	Fire escape ordered.	

ERIE.

Watson's Paper Mill,	Building papers, etc.,	250	6	..	4	Good,	Aug. 19.		
Erie City Iron Works,	Engines and boilers,	575	....	..	15	do.	Aug. 19.		
Downing Carriage Company,	Baby carriages, wagons, etc.,	14	16	..	3	do.	Aug. 19.		
Erie Malleable Iron Works.	Malleable iron goods.	284	....	..	26	do.	Aug. 20.		
F. F. Adams Company.	Wringers and novelties,	80	....	..	12	do.	Aug. 20.		

ERIE—*Continued.*

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Jarecki Manufacturing Company, .	Brass and malleable iron fittings.	725	. . . .	. .	51	Good,	Aug. 20.		
Lovell's Manufacturing Company, .	Animal traps and novelties, .	100	. . . .	. .	22	do.	Aug. 20.		
Pennsylvania Manufacturing Co., .	Brass fittings, etc., ...	45	. . . .	. .	12	do.	Aug. 20.		
Boston Store, ...	Dry goods, etc., ...	22	25	. .	4	do.	Aug. 21.		
Erie Pail Factory, ...	Pails and tubs, ...	75	. . . .	. .	15	do.	Aug. 21,	Comply with sections 1, 2 and 3.	Complied.
Maner Confectionery Company. . .	Candy and crackers, ...	44	31	. .	10	do.	Aug. 21.		
Maner Confectionery Company, . .	do. do.	50	45	. .	. . .	do.	Nov. 27,	Comply with sections 1, 2, 3 and 12, ...	Complied.
Jarecki Manufacturing Company, .	Foundry and fittings, ...	730	. . . .	. .	63	do.	Nov. 27.		
Erie City Pail Factory, ...	Pails and tubs, ...	75	. . . .	. .	25	do.	Nov. 28.		
Watson's Paper Mill.	Building papers, ...	224	11	. .	6	do.	Nov. 28.		
Downing Carriage Company, ...	Children's carriages and wagons.	80	30	. .	16	do.	Nov. 28.		
Lovell's Manufacturing Company, .	Animal traps and wringers, .	100	. . . .	. .	30	do.	Nov. 28.		
F. F. Adams Company, ...	Wringers and novelties. . . .	85	. . . .	. .	12	do.	Nov. 28.		
Erie Malleable Iron Works, ...	Iron castings, etc., ...	268	. . . .	. .	22	do.	Nov. 28.		

NEW BRIGHTON.

M. T. & S. Kennedy,	Cooperage.	52	....	..	18	Good,	June 18.		
Bently & Gerwig,	Twines,	67	75	..	62	do.	June 19.		
Sherwood Bros..	Pottery, brown and decorated ware.	80	20	..	25	do.	June 19.		
New Brighton Pottery Company,	Brown stoneware,	99	11	..	6	do.	June 19.		
Standard Horse Nail Company,	Horse nails.	80	35	.	...	do.	June 19.		
Bentley & Gerwig,	Twine and cordage,	67	75	..	74	do.	Oct. 14.		
New Brighton Pottery Company,	Stoneware,	117	13	..	14	do.	Oct. 15.		
Sherwood Bros.,	do.	84	28	..	21	do.	Oct. 15.		
M. T. & S. Kennedy,	Kegs and cooperage,	49	....	..	14	do.	Oct. 15.		

BEAVER FALLS.

Carnegie, Phipps & Co.,	Nails,	211	9	..	6	Good,	June 17.		
Western File Company,	Files,	105	15	..	10	do.	June 17,	Provide automatic safeguards at upper landing of small elevator.	Complied.
Co-Operative Glass Company,	Glassware,	114	....	..	24	do.	June 17,	Gates to elevator,	Complied.
Valley Glass Works,	Glass specialties,	106	8	..	21	do.	June 18,	Gate to elevator,	Complied.
Mayer Pottery Company.	White chinaware.	60	35	..	16	do.	June 18,	Gate to elevator,	Complied.
Beaver Falls Art Tile Company,	Fine tile.	47	53	..	7	do.	June 18.		
Co-Operative Glass Company.	Glass tableware,	132	....	..	29	do.	Oct. 13.		
Pittsburg Glass Company,	Glassware, lamps, etc.,	66	9	..	14	do.	Oct. 14.		
Western File Company,	Files, etc.,	84	16	..	12	do.	Oct. 14.		
Mayer Pottery Company,	White stoneware.	62	38	..	16	do.	Oct. 15.		
Art Tile Works Company,	Artistic tile,	46	41	..	8	do.	Oct. 15.		

PHILLIPSBURG.

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Phœnix Glass Company, ...	Fine glassware.	559	74	. .	70	Good,	June 16.		
Phœnix Glass Company, ...	Glassware and electric bulbs,	571	79	. .	73	do.	Oct. 1.		

ROCHESTER.

Point Bottle Works, ...	Bottles and jars, ...	107	. . . .	. .	15	Good,	June 16.		
Rochester Tumbler Works, ...	Glassware, ...	490	110	. .	133	do.	June 20.		
Rochester Tumbler Company, . . .	do.	488	112	. .	135	do.	Oct. 1.		
Point Bottle Works, ...	Bottles, ...	100	. . . .	. .	16	do.	Oct. 1.		

GREENSBURG.

Greensburg Glass Company, ...	Glass tableware, ...	168	17	. .	28	Good,	Oct. 7.		
Kelley & Jones Company, ...	Iron and brass fittings, ...	301	4	. .	12	do.	Oct. 7.		
Gillinder & Sons, ...	Glass tableware, ...	139	11	. .	27	do.	Oct. 7.		

JEANETTE.

Fort Pitt Glass Works,	Glassware,	329	52	..	34	Good,	Oct. 6.		
McKee & Bros,	Glass tableware,	475	25	..	63	do.	Oct. 6.		

TARENTUM.

U. S. Glass Company (Factory E),	Glass tableware,	128	24	..	28	Good,	Oct. 28.		
C. L. Flaccus,	Prescription bottles,	375	....	..	105	do.	Oct. 28.		
U. S. Glass Company (Factory C),	Glass tableware, lamps, etc.,	132	108	..	128	do.	Oct. 28.		

GRAPEVILLE.

Westmoreland Specialty Company,	Glassware,	133	47	..	30	Good,	Oct. 6.		

BRADDOCK.

Edgar Thompson Steel Works,	Steel rails,	3,500	....	..	45	Good,	July 15.		

HOMESTEAD.

Homestead Glass Works,	Glass tableware,	114	6	..	50	Good,	Sept. 1.		
Homestead Glass Works,	do. do.	171	9	..	20	do.	Oct. 27,	Comply with sections 2 and 3,	Complied.

WILKINSBURG.

Park Place Laundry,	Laundry,	46	84	..	7	Good,	July 29		

OLIVER.

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Duquesne Steel Works, ...	Steel billets, ...	780	. . . .	. .	20	Good,	Sept. 1.		

COCHRAN STATION.

Howard Plate Glass Company, . . .	Plate glass, ...	422	8	. .	28	Good,	Sept. 1.		

MONONGAHELA CITY.

Union Paper Mill, ...	Paper and paper sacks, . . .	20	10	. .	1	Good,	July 23.		

CHARLEROI.

Charleroi Plate Glass Company, . .	Plate glass, ...	294	11	. .	8	Good,	July 23.		

CALIFORNIA.

California Glass Company, ...	Flint glass bottles, ...	71	. . . .	. .	14	Good,	July 24.		

BUTLER.

Standard Plate Glass Works,	Plate glass,	488	12	..	3	Good,	June 9.		
Hamilton Glass House,	Bottles, jars and milk cans,	80	....	3	24	do.	June 9,	Dismiss three children under 12,	Complied.

ETNA.

Spang, Chalfant & Co.,	Wrought iron tubes and pipes,	1,000	....	..	100	Good,	July 15.		
Spang, Chalfant & Co.,	do. do. do.	1,100	....	..	72	do.	Nov. 4.		

MUNHALL.

Homestead Steel Works,	Steel,	3,500	....	..	35	Good,	Oct. 19,	Comply with section 12.	Complied.

McKEESPORT.

National Tube Works Company,	Iron pipes, etc.,	5,500	....	..	134	Good,	July 16.		

KITTANNING.

The Wick China Company,	White and decorated china,	95	30	..	11	Good,	Nov. 23.		

PARKER'S LANDING.

Parker Glass Company,	Bottles and jars,	105	....	..	37	Good,	June 9,		
Parker Glass Company.	Glass bottles,	120	....	..	38	do.	Nov. 23,		

CHARTIERS.

NAME OF FACTORY OR WORKSHOP.	Goods Manufactured.	NUMBER EMPLOYED.				Sanitary condition.	Date of inspection.	Orders Given.	Compliance.
		Males.	Females.	Under 12.	12 to 16.				
Leasdale Glass Company, ...	Glass bottles, ...	70	. . . .	. .	. . .	Good,	Nov. 13.		

WASHINGTON.

Hazel Glass Company, ...	Fruit jars.	100	10	. .	15	Good,	Nov. 12,	Comply with sections 1, 2 and 3, ...	Complied.
Washington Glass Company, ...	Bottles, ...	115	. . . .	. .	35	do.	Nov. 12,	Comply with sections 2, 3 and 7, ...	Complied.
Crescent Glass Company, ...	Opaque glassware, ...	18	2	. .	10	Fair,	Nov. 12,	Comply with sections 2, 3 and 10, ...	Complied.

FALLSTON.

W. T. & S. Kennedy, ...	Kegs and cooperage, ...	50	. . . .	. .	23	Good,	June 18.		
Thomas Clarkson, ...	Woolen mill, ...	3	10	. .	. . .	do.	June 18.		
Kennedy's Keg Works.	Cooperage, ...	42	. . . .	. .	15	do.	Oct. 15.		

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